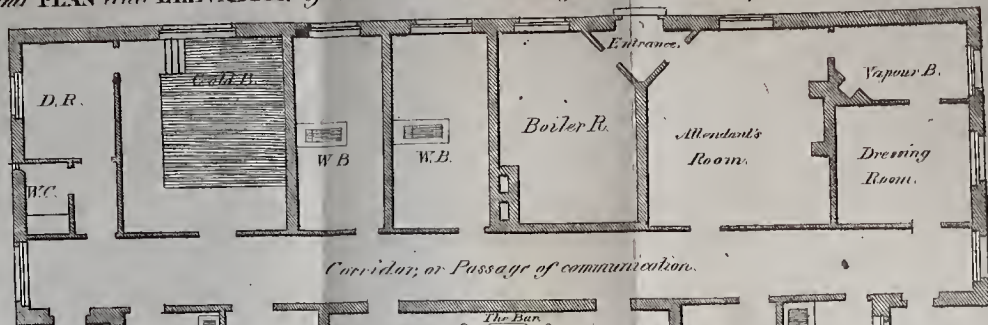


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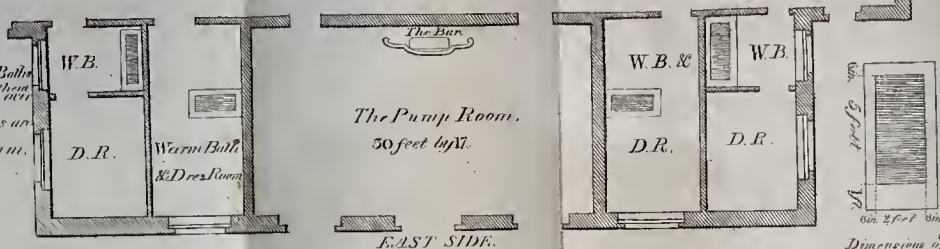
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A ground PLAN and ELEVATION of the Baths now erecting over the New Sulphur Well at CROFT, Aug. 1820.



The SE. & N.E. warm Baths have each a shower bath over. The Dressing Rooms are all warmed by Steam.



Dimensions of one of the Baths.
 5 feet 6 inches high.
 4 feet 6 inches wide.

Scale. — 14 feet to an Inch, or 14 of an Inch to a Foot.

THE ELEVATION FACING THE EAST.

AA The Verandah or covered Walk.



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AN
ANALYSIS
OF THE
WATERS
OF
Dinsdale & Croft,
• WITH
Practical Observations
ON THEIR
MEDICINAL POWERS,
Illustrated by Cases.
TO WHICH IS ADDED

REMARKS ON BATHING;
INTENDED FOR THE USE OF INVALIDS.

BY THOMAS DIXON WALKER,
SURGEON, &c., HURWORTH.

SECOND EDITION.

"By the injudicious exhibition of mineral waters, much danger and real injury have often arisen which might have easily been prevented."
W. R. Clanny, M. D., on Butterby Water.

DURHAM:

PRINTED AND SOLD BY G. WALKER; ALSO BY THE AUTHOR; BY
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1828.

INTRODUCTION.

ALL waters, properly speaking, except rain water, may be called mineral; as they undoubtedly derive, from the strata through which they pass, a degree of impregnation; but, in a medical sense, this term is limited to those waters, distinguished from common water, by some peculiar smell, taste, colour, or temperature, and which are found to produce some remarkable change on the human constitution.

Mineral waters have been divided into four classes; the sulphureous, or hepatic, the chalybeate, the acidulous, and the saline. Of these the sulphureous, have always been held in the highest estimation, as being most efficacious in the removal of disease.

The HEPATIC, or SULPHUREOUS WATERS, are those which contain sulphuretted hydrogen gas, and are distinguished by the odour of sulphuretted hydrogen which they exhale, and by the property which they possess of blackening silver and lead. The nature of sulphureous waters long puzzled the chemist; for, although they frequently deposit sulphur spontaneously, yet no sulphur could be artificially separated from them. The secret was at last discovered by Bergman. These waters are of two kinds, in the one, the sulphuretted hydrogen gas is uncombined; in the other, it is united to lime or an alkali. They are frequently also impregnated with carbonic acid, and usually contain some muriates or sulphates. In the Dinsdale Water, and also the New Well at Croft, the sulphuretted hydrogen is uncombined, and upon exposure to the air the sulphur is deposited. Upon collecting a quantity of the sediment from the cold bath at Dinsdale, and drying it; it burnt with a blue flame, and possessed the other characters of sulphur.

The CHALYBEATE WATERS contain a portion of iron, and are distinguished by the property they possess of striking a black colour with the tincture of galls. The iron is usually held in so-

lution by carbonic acid; in some instances it exists in the form of a sulphate, but such springs are rare. It very often happens that the carbonic acid is in excess; in which case the waters are not only chalybeate but acidulous. This is the case with the water of the old well at Croft.

The ACIDULOUS waters contain a considerable portion of carbonic acid gas. They are easily distinguished by their taste, and by their sparkling when poured into a glass. They contain in general some common salt, and a portion of the earthy carbonates.

SALINE WATERS, contain only salts in solution without iron or carbonic acid in excess. They are distinguished into four orders. The waters belonging to the first order, contain salts whose base is lime, and generally either the carbonate or sulphate. They are known by the name of hard waters, and have but a slight disagreeable taste. The waters belonging to the second order are those in which common salt predominates. They are recognised by their salt taste, and like sea water usually contain some magnesian and calcareous salts. The water of the third order contain sulphate of magnesia, they have a bitter taste, and are

purgative. The waters of the fourth order are alkaline, containing carbonate of soda, and are distinguished by the property which they have of tinging vegetable blues, green.*

In the earliest ages, these springs attracted the attention of mankind, and were resorted to by the sick, and employed medicinally, either externally or internally. In England, the famous bath in Somersetshire is said by some to have been in use 800 years before Christ. Julius Cæsar and the Roman General Sertorius, bathed in the waters of Barege to restore energy to their rigid limbs, after their campaign in Gaul and Spain. Henry the IV of France, frequented them in his youth, and Louis XVI. dignified them with an Hospital for his wounded officers, and another for his soldiers; who, when past all other means of cure, were from the remotest parts of France sent to Barege as a last and sure resource.† In the dark ages of superstition and ignorance, every medicinal spring was believed to be under the tutelary power of some spirit or guardian saint; and many ceremonies were performed previous to drinking the water. Many such wells, and

* Condensed from Thomson's System of Chemistry.

† See Sir Arthur Clarke's Essay on Bathing, page 94.

pools, and lakes, were scattered among our hills, and vales; and to them, mostly on the first morning of May, the peasantry flocked far and near, for the sake of healing the sick, or the maimed, with a drink from the charmed water, as the day dawned. A short hymn or song, expressive of faith in the virtues of the spring, and of hope of health in the sick person, was first chaunted, and then the pilgrims knelt down and lapped the water from their hands. It was unusual or subversive of the charm, or the virtue of the water, to drink it from a cup, unless the cup happened to be a blessed one, such as the pious of old always had in store for opulent pilgrims. When a cure was performed, and tradition says many were, the crutches of the lame, and a garment of the sick, were presented as an offering, and laid on the margin of the water, or suspended from the boughs of a neighbouring tree; and this too was generally accompanied by a religious chaunt. On the brink of many wells in Dumfriesshire and Galloway, ribbons and other little articles of female finery have been seen by people yet living, fastened so as to wave over the spring, the offerings of mothers for the

recovery of their children; and several of the wells yet bear the name of the guardian saint; and stories of the cures they performed of old, are still current in the country.*

About the end of the 17th century, an attempt was made to detect the ingredients of which these waters were composed, or to discover the substances to which they owed their medicinal properties; since that period much has been done by the labours of chemists, and many important discoveries have been made, which have considerably improved our knowledge of mineral waters. But we must confess that although many of these waters have been carefully examined by eminent chemists, and this branch of science has made great progress; we are very far from having all the certainty with regard to their contents that might be desired or expected.

When we consider that almost all Mineral Waters hold several different substances, in solution, which being united with water, may form with each other numberless compounds; that frequently some of their principles are in so small a quantity, that they can scarcely be

* See Allan Cunningham's *Songs of Scotland*, vol. i. page 196.

detected; and yet may possess great influence on the virtues of the water, and also on the other substances contained in the water; that the chemical operations used in the analysis of the water, may sometimes occasion essential changes in the substances that are to be discovered;* and that we cannot imitate them, so as to produce effects, exactly similar to theirs on the human constitution; the analysis becomes an arduous, and a difficult task.

The numerous and fanciful theories, which have been raised as to the manner in which mineral waters act upon the human frame, in the removal of disease, have induced many professional men to doubt their efficacy altogether. In general, the old writers on Mineral Waters, either from caprice, prejudice, or unworthy motives, made each particular spring in the neighbourhood of which they happened

* Dr. Clanny, in his valuable Treatise on the Mineral Waters of Gilsland, published in 1816, observes, "An idea has long been impressed upon the mind of the writer, that the solid contents of mineral waters are in a different state of combination, when suspended in the water, from what they are found to be when disengaged from it by evaporation. This subject is ably treated, for the first time, by Dr. John Murray, in his Analysis of the Mineral Waters of Dumblane, inserted in the seventh volume of the Transactions of the Royal Society of Edinburgh."

to reside, a specific for every disease to which the human frame is liable; and seem to have selected them rather as subjects of panegyric than of impartial examination; and, although this subject has long engaged the attention of the Physician and the Philosopher, and many works containing much valuable information have been published upon Mineral Waters; yet unfortunately, from the manner in which that information has been conveyed to the public, mixed up with technical terms, and theoretical explanations, involved in metaphor and obscurity, they are in general rendered useless to the invalid, who is most interested in their perusal.

A celebrated physician* has justly observed, that "In all things which our art contains, there is nothing that does *good*, but that may also do *harm*," and that when a remedy is used *indiscriminately*, it must of necessity very frequently be used *improperly*;" this observation can in no instance be more justly applied, than to the use of mineral waters; almost every individual considering himself capable of prescribing that, which in itself,

* Dr Meade.

appears so simple ; and I have frequently known very unpleasant consequences follow this abuse of a valuable remedy. This is of frequent occurrence ; to which may be added, a total disregard of dietetic rules, and the abuse of vinous and fermented liquors.

It is the object of the following pages to point out those diseases, in which the waters of Dinsdale and Croft may be used with the greatest advantage ; the particular stage or form of the disease in which they are most useful ; and the manner of using them.

With regard to the analyses, I believe they will be found correct ; and, if I have succeeded in giving a faithful view of my subject, I shall consider myself amply rewarded.

Hurworth, July 30, 1828.



Practical Observations
ON THE
MEDICAL POWERS
OF THE
DINSDALE WATER.

History and Situation.

THE Dinsdale Spaw is situated upon the north bank of the river Tees, about forty yards from the margin of that river. It was first discovered in the year 1789, by some workmen employed by the late Mr. Lambton, in searching for coal. The remarkable quality of the water attracting their attention, a hole was made in the ground, in the channel of the spring, for the purpose of bathing; and one of the workmen, who for many years had suffer-

ed from chronic rheumatism, was cured by drinking the water, and using the bath. From this period, until the year 1797, it was much resorted to by the neighbouring villagers; when, in consequence of the many remarkable cures effected by it, a bath was built for the convenience of cold bathers. The number of visitors, attracted by its healing powers, annually increasing, the baths have been rebuilt, within the last four years, upon a more extensive scale, and every convenience and comfort added, for the accommodation of the invalid.

The Spaw is now almost surrounded by a beautiful plantation, which to the westward extends nearly a mile, intersected with shaded walks; and, at intervals, seats are placed for the accommodation of the visitors.

Above the plantation, immediately behind the Spaw, our late worthy represen-

tative, Lord Durham, has, at an immense expence, erected a most splendid and capacious hotel; the accommodation will doubtless be upon a scale of convenience equal to its magnificence.

A little to the westward of the hotel is a slight elevation called Fox Hill, from which the surrounding country is seen to great advantage. Immediately below the wood, upon the opposite side of the river, one of the finest farms in the county of York presents itself to the eye of the spectator; to the south and south east lies the beautiful vale of Cleveland, terminated at a distance by a bold range of mountains, called the Cleveland and Hambleton Hills.

To the east of the Spaw, about half a mile distant, is situated, the pleasant village of Middleton-one-Row, the view from which is gratifying beyond description. It is the usual resort of visitors

during the season. The accommodations are now of a very superior description, the Inn having been lately rebuilt upon a much more extensive scale, and the general convenience and comfort of the place much improved; in fact threefourths of the village, within the last few years, has been rebuilt, and many new houses added.

Dinsdale is five miles from the market town of Darlington, four miles from Croft, celebrated also for its mineral waters, and within eight miles of Stockton, and five of Yarm. The Darlington and Stockton rail-road runs within a mile of the Hotel at Middleton, thus rendering the conveyance to and from the above places pleasant and expeditious. The surrounding country is extremely fine, and abounds with every thing that is requisite for comfort and uxury.

Analysis of the Water.

ALL mineral waters acquire their peculiar properties by passing through earths, containing salts, or pyritous substances that are in a state of decomposition.

“The different bodies which are dissolved and combined in mineral waters, are detected by the addition of certain substances to the water, which is subjected to examination. The consequence of the addition is some change in the appearance of the water, which indicates the presence or absence of the bodies suspected. The substances thus employed are distinguished by the name of *tests*, and are the instruments by means of which the analysis is accomplished.”*

The Dinsdale Water when first drawn from the spring is perfectly transparent. It has a very strong sulphureous smell,

* Thompson's Chemistry.

which may be compared to that of a damp rusty gun barrel. To the taste it is not unpleasant, and like the generality of hepatic waters, leaves a slight sense of sweetness upon the palate. It loses its transparency when exposed to the air, the sulphuretted hydrogen gas undergoing decomposition, the oxygen of the atmosphere uniting with the hydrogen, the sulphur is precipitated in a state of minute division.

The temperature of the water is 52° . The specific gravity 1.0054, distilled water being 1,0000.

Action of Tests.

1. Litmus paper was slightly reddened, but this tinge disappeared upon drying.

2. Lime-water produced a copious white precipitate, which was soluble with effervescence in Muriatic acid.

3. Nitrate of Lead, a copious black precipitate, with the boiled water a white precipitate is produced.

4. Muriate of Barytes, a copious white precipitate.

5. Nitrate of Barytes was added to the water as long as any precipitate was produced; it was then filtered, and a solution of Nitrate of Silver dropped into the filtered water; a white precipitate was produced, insoluble in Nitric acid.

6. A portion of the water was saturated with an Alkali, and after filtration, Oxalic Acid was added, which caused an immediate and copious white precipitate.

7. To a portion of the boiled and filtered water pure ammonia was added, which caused a light cloud.

8. Nitrate of Barytes was added to the water, so long as any precipitate was produced, the fluid was then filtered, and Lime-water added to the filtered water; a light cloud was produced.

9. Oxalate of Ammonia, a dense white precipitate.

10. Barytes water, a copious white precipitate insoluble in Nitric Acid.

11. Subcarbonate of Soda, a white precipitate.

12. A solution of Carbonate of Ammonia was added in slight excess to the water, which rendered it milky, it was then filtered, and a solution of Phosphate of Soda added to the filtered liquor; an immediate white precipitate of a granular appearance was deposited upon the side and bottom of the glass.

13. Syrup of Violets, rendered the water of a beautiful green.

14. Paper stained with infusion of Brazil wood, was rendered darker, with a slight shade of blue.

From these effects, we may presume that the water contains muriatic and sulphuric acids, united to lime and magnesia, with a strong impregnation of sulphuretted hydrogen and carbonic acid gas.

Examination of the Gaseous contents.

A. EIGHT ounces of the water were made to boil for fifteen minutes, in a glass flask luted to a receiver, into which a solution of acetate of lead, with excess of acid had previously been introduced.

In this manner a quantity of sulphuret of lead was obtained, which, when washed

and dried, weighed 2·375 grains.* This quantity may be stated as the representative of 1·25 cubic inches of sulphuretted hydrogen gas.

B. An equal portion of the water, as was employed in the last experiment, was treated in a similar manner, substituting for the acetate of lead in the receiver, a quantity of Lime-water; in this manner, 1·15 grains of carbonate of lime were deposited, representing ·575 of a cubic inch of carbonic acid gas.

C. The gaseous substances contained in eight ounces of the water were collected in a graduated jar, placed in a water bath. The jar, with its contents, was allowed to remain inverted for forty-eight hours; during which time, it was occasionally agitated, with a view to facilitate the ab-

* The experiments for obtaining the quantity of the gasses, were each performed three times, and the medium of the three taken as a standard.

sorption of such portion of the gaseous contents as might be soluble in water. There still remained $\cdot 4$ of a cubic inch of gas, the corrections for pressure and temperature being duly made; which water did not appear capable of absorbing, and which, when exposed to the action of a solution of iron impregnated with nitrous gas, did not undergo any diminution, and which possessed the characters of pure azote.

Examination of the Solid contents.

A. SIXTEEN ounces of the water slowly evaporated, yielded 28 grains of solid residue, dried at the temperature of 212° .

B. This product was digested in alcohol for several days, and a solution of part of the saline contents obtained. This evaporated to dryness, gave a small quantity of solid matter, which by exposure

to the air, deliquesced considerably, and became nearly all dissolved.

C. The deliquesced mass was dissolved in distilled water; and the solution decomposed at a boiling heat by the addition of subcarbonate of soda. The precipitate thus obtained, was treated by dilute sulphuric acid, and a quantity of sulphate of lime and sulphate of magnesia was produced, equivalent to 1.134 grains of muriate of lime, and to .395 of a grain of muriate of magnesia.

D. The fluid from which the earths were separated by subcarbonate of soda, was neutralized by nitric acid, and then decomposed by nitrate of silver. A quantity of muriate of silver was obtained equivalent to .5 of a grain of muriate of soda, deduction being made for the proportion of the muriatic acid necessary for the constitution of the two earthy muriates, mentioned in the preceeding section.

E. The saline residue insoluble in alcohol was digested in distilled water, and a further solution of its contents obtained. The matter insoluble in this menstruum being set aside for further examination.

F. The watery solution was divided into two equal portions. The one portion was decomposed by a solution of sub-carbonate of soda, and a precipitate of carbonate of lime obtained, which, when dried, weighed one grain.

G. The other portion of the watery solution was treated in succession by nitrate of barytes, and by nitrate of silver. Precipitates were obtained of sulphate of barytes, and muriate of silver equivalent to 3.4875 grains of sulphate of lime, and .851 of a grain of muriate of soda.

H. The substance insoluble in water was acted upon by acetic acid, assisted

by a gentle heat, a slight effervescence taking place. In this manner a further solution was effected, which, by the addition of a carbonated alkali gave a precipitate amounting to 3 grains of carbonate of lime.

I. The fluid from which the carbonate of lime was obtained, was treated with acetate of barytes, and a further precipitate was obtained of sulphate of barytes equivalent to 1·743 grains of sulphate of lime.

K. The substance insoluble in acetic acid, when dried, weighed 10 grains, and upon further examination was found to be composed of 9·5 grains of sulphate of lime.

L. The remaining ·5 of a grain, resisted both the action of acids and alkalies; and from being almost entirely combustible, appeared to be extractive matter.

From this, the direct mode of analysis, the composition of the water appears to be in one gallon, as follows:—

Of Gaseous contents.	Cubic Inches.
Sulphuretted Hydrogen* ~~~~~	20
Carbonic Acid† ~~~~~	9.2
Azote ~~~~~	6.4
	<hr/>
	35.6
	<hr/>

* *Specific Character.*—Smell of putrid eggs. *Taste*
—Nauseous and bitter. Sp. gr. 0.00135.

Constituent Parts.—Hydrogen . . . 6.244
Sulphur . . . 93.756

100 *Berzelius.*

† *Specific Character.*—Elastic. *Taste*—Acidulous
and pungent.

Constituent Parts.—Carbon . . . 27.4
Oxygen . . . 72.6

100 *Gay Lussac.*

Of the solid contents.	Grains
Muriate of Lime	9.072
———— Soda	17.616
———— Magnesia	3.160
Carbonate of Lime	40.
Sulphate of Lime*	145.744
Extractive matter	4
Loss in the different experiments	4.408
	<hr/>
	224.000
	<hr/>

Medical History.

ALTHOUGH chemical analysis is an important source of information, in making us scientifically acquainted with the Dinsdale Water, yet experience and unprejudiced observation, can alone give us a proper confidence in it as a remedy.

In forming our opinion of the activity of any medicinal substance contained in

* I strongly suspect, that, previous to depriving the water of its gaseous contents, this salt exists in the form of a *Hydro Sulphuret of Lime*.

the water, we must consider that it exerts its influence under the most favourable circumstances. The ingredient is in a state of the most minute division; its vehicle is received into the stomach, when free from food, and it consequently acts readily upon the whole surface of this organ, being rapidly absorbed and carried into the circulation, not requiring like food, to remain in the stomach for the purpose of digestion.

“ The chemical analysis of mineral waters, amongst several substances which appear to have but little effect on the human body, present us with a few, whose efficacy in the use of disease is undoubted, and which stand high in value on the list of *Materia Medica*. Every one however, who compares these natural medicines with those that are compounded by art, must be struck with the smallness of the doses that are employed of the former, compared with the benefits which

are produced during their use; and he might hence be apt to put a wrong value on their real efficacy, if he were not aware of some circumstances which increase to an unusual degree the activity of these substances. One which appears to me of no small consequence, is the extent of their dilution with water; for thereby, any medicine highly active in all states, is diffused equally over the extensive surface of the stomach, and is enabled to act all at once in the most advantageous manner possible. It is true that the force of impression on any particular part is hereby lessened, and therefore dilution may be carried to excess; but the circumstance of extent of sentient surface acted on at once, will probably, in most cases, more than counterbalance this, and especially, as the action is milder, the stomach may receive it much oftener. Besides these we shall find that some of the foreign substances in mineral springs, though highly active in themselves, are

never used under the same form of composition elsewhere than in these waters. This gives, in some cases, a superiority peculiar to these natural medicines. Of this kind is the carbonated iron, held in solution by carbonic acid, and the sulphur by hydrogen gas.”*

When we consider that the majority of diseases to which the human frame is liable, are caused principally by a disordered state of the digestive organs, and a consequent vitiated state of those secretions, upon which the health of the body depends;† and then enquire in what manner the Dinsdale water acts upon the

* Saunders on Mineral Waters, page 455.

† I do not mean to assert that a disordered state of the stomach and bowels, is the exciting cause of disease in the *majority of cases*. In most instances, *the original disease* is trivial and would soon cease, if it was not kept up by the disordered state of the stomach and bowels which it *had induced*.

system, our surprise at its efficacy in removing so many diseases, apparently of a different nature, will cease.

We find in addition to the aperient properties, which it derives from its solid contents, that it is powerfully alterative and antiphlogistic; and hence its utility, not only in dyspepsia, and diseases of that class, but also in all cases of chronic inflammation comes to be understood. An eminent writer observes, “during a series of years, I have traced the operation of the sulphuretted hydrogen gas, from one organ of the body to another, from the skin, joints, and eyes, to the viscera of the head, chest, and belly: and the sum of my observation authorises me to declare that it is one of the most powerful antiphlogistic agents which can be found, for wherever the chronic inflammation be seated, it will more frequently remove it than any other single expedi-

ent, which has hitherto been used and recommended by the medical faculty.”*

The invalid, in every instance, previous to commencing a course of the water, ought to prepare himself, by taking some mild aperient medicine, and if he be of a very plethoric habit of body, it will be adviseable to lose a little blood. As a general rule, a pill composed of calomel and extract of colocynth, may be taken at bed-time, and the usual black draught the ensuing morning. When this precaution has been neglected, the water has, occasionally, proved highly stimulating, and an unfavourable excitement has taken place, prejudicial to the state of the invalid. It is therefore essentially requisite, and should it so happen that the bowels are in a very sluggish state, it will be proper to continue the use of the aperient pill every other night,

* Dr. Armstrong; see his work on Scarlet fever, Measles, &c. &c.

in conjunction with the water, until such state of the alimentary canal be removed. Or if this mild dose of mercury should disagree with the invalid, some other purgative may be substituted in its place. For as the water does not, in every instance, pass off by the bowels, but on some constitutions acts more powerfully as a diuretic or alterative, some aid may, in that case, be necessary; and the use of a purgative pill will occasionally be more beneficial than the addition of Epsom Salt to the water, for in many cases, it is our wish that the water should act as an alterative, which operation cannot reasonably be expected, if it is made to pass off by the bowels.

The invalid who is recovering from an acute disease, and resorts to the Spaw for the complete restoration of his health, should be moderate at first, in the use of the water, particularly when there is a tendency to a lax state of the bowels;

for by producing a violent action in the alimentary canal, the digestive organs will be weakened, and the cure retarded. As a general rule, only a sufficient quantity of the water should be taken to produce one healthy evacuation daily.

The same observations hold good, with regard to the use of the water as a bath, in both cases, a preparation is highly necessary; for independently of its preventing any unpleasant consequences, it will materially forward the cure.

It is almost impossible to lay down a rule with regard to the quantity of water which may be taken during the day; almost every case requiring a peculiar mode of treatment, arising from the constitutional habit, or temperament of the individual. As a general rule, when it is wished that the water should act upon the bowels; the patient should rise early, repair to the well, and drink the

water at the fountain; the medium dose may be stated at a pint, swallowed at two draughts, an interval of ten minutes being allowed to take place between each draught, during which time gentle exercise may be taken. When the water is taken with a view that it may operate quickly as a purgative, auxiliary means being used, if necessary, the whole of the above quantity may be drank before breakfast: but if on the contrary we wish for its effects as a mild aperient, and also as an alterative, then only half of the above quantity may be taken before breakfast, and smaller quantities, repeated at intervals, during the day.

According to the particular circumstances of the case, the age, constitution, &c. of the individual, the quantity now stated may be increased or lessened; but invalids acquire, in a very short time, a knowledge of the quantity necessary to produce the desired effect.

It happens, occasionally, that the stomach does not receive the water so well in its natural state of coldness; and when such is the case, it may be warmed a little, by the addition of a small quantity of the boiling water; but its gaseous properties are more perfect in its original temperature.*

In order that the invalid may derive permanent benefit from the use of the water, he ought to persevere in its use for a month or six weeks; observing, during this period, an occasional interval of a few days, particularly if an eruption makes its appearance upon the surface; a circumstance not uncommon, when the water has been continued for a length of time; but it is of no mo-

* When the water does not pass off readily by stool, then one half of the dose prescribed may be taken warm, and the remainder cold, ten minutes after taking the first; this will in general make it active.

ment, usually disappearing in a few days after discontinuing its use.

The water will bear removal, and keeping without any material diminution of its gaseous properties, provided proper care be observed in corking and sealing it down in pint bottles, and putting it in a cool place. By adopting these precautions, the use of it may be resumed at intervals, when the individual has returned home.

The limits of this tract will not allow me to enter into any extended considerations of the particular nature and treatment of all the different diseases in which the Dinsdale Water may be used with advantage; I shall therefore confine myself to general remarks; occasionally pointing out that plan which I have observed to be most successful in the removal of disease.

IN DYSPEPSIA and HYPOCHONDRIASIS, the Dinsdale Water is a remedy of decided efficacy: but too much caution cannot be observed in the use of it, particularly in the latter form of the complaint. When the disease depends upon a debilitated state of the digestive organs, the water ought to be taken as an alterative, rather than as an active aperient. But when, as is more frequently the case, the disease arises from a course of repletion, or from the habitual use of vinous or spirituous potations, the water may be taken more freely with advantage; but in this, as in every other case, particular care ought to be taken not to distend the stomach, by drinking too much of the water at one time. In both cases, a due preparation must be observed previous to making use of the water at all; and I wish in this place, once for all, to impress upon the invalid the absolute necessity of a proper preparation in every case.

Individuals labouring under diseased action of the liver, whether arising from chronic inflammation, or obstruction of the biliary secretions, will derive great benefit from the use of the water; upon this organ, it has a specific effect, rapidly subduing inflammation, and producing healthy action; at the same time, the continued use of it does not produce debility, and the other unpleasant symptoms induced by a course of medicine.

There are many cases of diseased liver, accompanied by such an impaired state of the system, that the employment of active medicine would be hazardous; such cases will experience more benefit from a course of this water, properly conducted, than from any single medicine, in the *materia medica*, with which I am acquainted. Cases of this description are not unfrequently accompanied by a most obstinately constipated state of the bowels; it is, however, an encouraging considera-

tion to the invalid, that when this state of the bowels is once removed by the action of the water, it is not so liable to recur, as after the use of the drastic purgatives usually employed; the effect of the water appears to be more lasting, which, in every case of disease, but more particularly in diseases of this class, is an object of very great importance.

The term *bilious* has of late years become quite a hackneyed expression, being applied to every disordered state of the digestive organs, whether the liver be torpid in its action, in the secretion of bile, or in a state of irritation, secreting it in excess. In either case the invalid will derive benefit from the Dinsdale Water; having frequently remarked that upon this organ it seems to possess an effect, almost as specific as that of mercury.

The jaundiced patient will require more preparation, and greater attention in the

combined use of medicine, particularly when the disease has been of long standing, but I never yet met with a case that did not ultimately yield to a proper plan of treatment.

CASE I.

T. W. aged 25, complained of loss of appetite, sickness, headache, debility and constipated state of bowels; the alvine discharges were most offensive, the pulse small and quick, he passed sleepless nights, and there was a slight tenderness in the region of the liver. I gave him a purgative pill to take at bedtime, and the usual black draught the following morning, but as his bowels were particularly costive, I directed him to take a purgative pill every night in conjunction with the water, and to use the warm bath. When he had followed this plan for a fortnight, his bowels became more regular, his appetite and

strength improved, the tenderness in the side vanished, and he slept well; and at the expiration of three weeks, every unpleasant symptom was removed.

I have previously remarked, that the water is apt, occasionally, to produce an eruption upon the surface, but I never saw it in so violent a degree, as in the present case, it however, went off in a short time after he discontinued the use of the water.

CASE II.

July 3rd. 1825, T. G. aged 32, complained of pain in the right side, which was increased by pressure, and a numbness in the right shoulder, loss of appetite, short dry cough, a constipated state of the bowels, furred tongue, thirst, and watchfulness, the skin was dry and harsh, and had a yellow tinge, occasioned by the absorption of the bile, the

pulse quick and irritable; he had been getting gradually worse for a month. I applied a number of leeches, and a blister to the side, directed him to take a pill, composed of calomel and extract of colocynth, every night, to use the warm bath, and to drink freely of the Dinsdale Water.

July 6. The pain in the side much easier, the bowels more regular, but the discharges black like tar, and most offensive; the warm bath had had a most soothing effect.

July 12. Considerably improved, the pain in the side, and cough, quite gone the evacuations more healthy, the skin moist, the pulse full and soft, and sleeps well.

From this time his recovery was rapid, the jaundiced state of the skin disappeared, his appetite improved, &c. and in

the course of a month he was quite well.

CASE III.

Mr P., aged 45, complained of pain in the right side, increased by pressure, loss of appetite, palpitation of the heart, cough, harsh dry skin, pulse 100, lax state of bowels, the evacuations most offensive; he was much reduced, his countenance anxious, with quite a cadaverous appearance. After using the warm bath every other day, and taking the water as an alterative, for six weeks, he returned to his family quite well.

CASE IV.

A gentleman, aged 40, had laboured under an affection of the liver for twelve months, he complained of irregular appetite, occasional sickness, and vomiting of bile, the alvine secretions sometimes black,

but more frequently the colour of pipe clay; he did not complain of any acute pain in the region of the liver, neither was much inconvenience produced by pressure upon that organ, pulse 98, the skin charged with bile, and he laboured under great depression of spirits. By drinking the water, and using the warm bath daily, for three weeks, he was restored to perfect health.

CASE V.

Mr —, aged 43, had laboured under an affection of the stomach for *sixteen years*, during which time he had been under the care of several medical gentlemen in Sunderland. He complained of pain in the stomach, which was always increased upon taking food, and from which he obtained no relief until the stomach was emptied, either by the process of digestion, or, as was more frequently the case, by the food being rejected; he was much reduced, his bowels

tolerably regular, and he laboured under great depression of spirits. By drinking the water, and bathing for three weeks, he was able to return home quite well, in fact he never suffered from the pain after he had taken the water ten days.

PALPITATION OF THE HEART is a frequent attendant upon a disordered state of the digestive organs, particularly when the disease is of long standing, and sometimes from its violence constitutes a leading symptom in the complaint; the patient referring all his suffering to the diseased action of the heart; and as it is well known that this symptom is always present in a greater or less degree in disease of structure of the heart itself, or the large vessels, the invalid frequently sinks into a desponding state from which all our efforts to rouse him are fruitless. I subjoin the following cases in which the Dinsdale Water was evidently of great service.

CASE VI.

Mr. —, aged 55, informed me that for eight months he had laboured under an occasional irregular action of the heart, and that sometimes the palpitation was so violent as to be evident to the naked eye; he was under the necessity of taking strong purgative medicine daily, in order to keep his bowels at all regular, and that if he failed in doing so he was sure to suffer severely, from an attack of palpitation. His countenance betrayed great anxiety of mind, his breathing short and oppressed, pulse 90 and irregular, appetite bad, foul tongue and dry skin. I directed him to take two tea spoons full of Epsom salt in a tumbler of the Spaw water every morning and to use the warm bath every day, omitting the use of all other medicine. After he had pursued this plan for a fortnight he was much relieved, and it

became unnecessary to continue the Epsom salt, as the water acted upon the bowels without any assistance. In six weeks he returned home much improved, and he lately informed me, by letter, that he had not again suffered from a return of the palpitation since he left Middleton, but that his bowels had continued regular, rarely having occasion to use laxative medicine.

CASE VII.

Mrs. ———, aged 47, complained of violent palpitation of the heart, from which she had suffered severely for five months, shortness of breath, loss of appetite, costive bowels, the evacuations black and offensive, she passed sleepless nights, pulse 84, and intermitting every tenth stroke. Upon enquiry I found that the disordered state of the digestive organs, had preceded the diseased action of the heart. By adopting a plan of

treatment similar to that mentioned in the last case, she rapidly recovered, and continues to enjoy good health.

The Dinsdale Water will be found a valuable auxiliary in **INCIPIENT PULMONARY CONSUMPTION**. I have paid great attention to the effects produced by its use in this disease; and I am of opinion that it is only in the first stage of the malady that the invalid will derive permanent advantage from its use. The first symptom with which this insidious disease makes its approaches, is a languor and unwillingness in the individual to exert himself, either mentally or bodily; an increase of heat in the palms of the hands, and soles of the feet, occasioned by accelerated respiration, the breathing is short, and if the individual ascend an acclivity, or flight of steps, he is obliged to stop for breath. Then come flushings in the face, and chilliness after dinner, the body exhibits evident marks of wast-

ing, the pulse is quick, small, and vibrating, the patient begins to cough, and upon attempting to make a full inspiration, he experiences more or less pain or uneasiness in some part of the chest. When this species of consumption has made further progress, when the suppurative stage of the tubercles has begun, I have never known the Dinsdale Water of much service; but when the disease has not advanced further than is indicated by the symptoms above enumerated, I have seen it produce the happiest effects. I have however never relied upon the efficacy of the water alone; but, in every stage of the disease, employed it in conjunction with the usual medicines, and I have observed a more decided effect produced by such combination, than when the usual medicines were employed alone. In particular, I have successfully recommended its use in conjunction with the Prussic Acid; and I believe that this, and many other

remedies, equally valuable, are laid aside, as useless or uncertain, by the practitioner, from inattention to their effects, and the proper method and precautions necessary to be observed in administering them.

My own observations have led me to conclude, that the Prussic Acid and medicines of this class, which act powerfully upon the nervous system, *never* produce any beneficial effect, unless the bowels are previously brought into a proper state. And I believe that the favourable result arising from the use of this medicine, may be attributed, in a great measure, to its being employed in conjunction with the Dinsdale Water; for independently of the good effects caused by the use of the water, in daily evacuating the bowels, and thus keeping them in a proper state for the *uninterrupted employment of the medicine*; the alterative and antiphlogistic properties of the water,

materially assist in restoring the invalid to health.

Of the use of the warm bath, I am inclined to speak very highly, having seen great benefit result from it; in fact, in more than one instance, I am convinced that the judicious use of it contributed as much to the recovery of the invalid as any other means employed.

Scrofulous tumours yield readily to the use of the Dinsdale Water, but whether we may reasonably infer, that tubercles of the lungs will be equally as readily resolved, is a most difficult point to determine; and I cannot speak positively upon the subject. In the following cases, in which the water, in conjunction with the Prussic Acid, were the only internal medicines employed, this effect certainly appeared to be produced; and upon the whole, I can, with confidence, recommend the use of the Dinsdale water in

the *first stage of this disease* as well worthy of a trial.

CASE VIII.

Miss ———, aged 18, of a florid complexion, fair hair, light blue eyes, long neck, prominent shoulders, and narrow chest, had from her infancy exhibited signs of scrophula, having suffered severely from an enlargement and suppuration of the glands in the neck; she complained of pain in the left side of the chest, with occasional palpitations of the heart, disturbed sleep, shortness of breath, increased upon bodily exertion, flushings in the face, in the afternoon; cough, expectorating a frothy mucus. She had evidently lost flesh, pulse 120, small and weak, bowels irregular, tongue white, and the fauces loaded with mucus; her spirits were tolerably good, although she had lost a sister in consumption, when about the same age. After the application of leeches and a

blister to the chest, which was kept open by the use of the savine cerate, and being prepared by aperient medicine; she commenced taking the Prussic Acid, in doses of one drop every six hours; drinking, at the same time, one pint of the Spaw Water, during the day; that quantity being found sufficient to keep the bowels in a proper state, and using the warm bath every other day. After she had persevered in this plan for three weeks, during which time the dose of the Prussic Acid was slowly increased to six drops to a dose, her pulse was reduced to 85, the palpitation of the heart and pain in the chest were nearly gone, being able to make a full inspiration without producing much uneasiness, her bowels were regular, her appetite improved and she slept well. In the course of another fortnight she was so much improved, that she laid aside the use of medicine altogether, using the Spaw Water alone, and shortly afterwards

she was restored to her friends in perfect health, which she continues to enjoy.

This case occurred previous to the first edition of this treatise going to press, but I purposely delayed publishing it until I was satisfied of the complete recovery of my patient.

CASE IX.

Mr ———, aged 22, of a consumptive habit of body, complained of cough, expectorating a frothy mucus; pain in the chest, increased upon making a full inspiration, shortness of breath, flushings in the face in an afternoon, burning heat in the palms of the hands and soles of the feet, pulse 130, small and weak; irregular bowels, disturbed sleep, and loss of strength; he had lost two brothers in pulmonary consumption. By adopting a plan of treatment similar to that mentioned in the preceding case, he

recovered in the course of six weeks, and continues to enjoy good health.

I have hitherto confined my remarks to the true pulmonary consumption, i. e. where the original disease is seated in the lungs; but consumption not unfrequently arises from disease or diseased action in the stomach or liver. It occasionally happens that an enlargement of the liver, by encroaching upon the contents of the chest, and thus impeding respiration, is the cause of disease, which would otherwise have lain dormant: and I have sometimes seen a dyspeptic patient labouring under symptoms of incipient consumption. Such cases require a different plan of treatment, by removing the original disease, the affection of the lungs usually vanishes.

Again, I have frequently met with a patient labouring under every symptom of true pulmonary consumption, when,

upon accurate examination, the disease was traced to inflammation of the mucus membrane lining the bronchiæ, or passage leading to the lungs; in such cases every unfavourable symptom has been removed, by the application of a few leeches, and a blister to the throat.

When affections of the chest arise in consequence of disease in the liver, or stomach, it will be necessary (in addition to the remedies employed, as recommended in such cases) that the invalid should take some preparation of mercury, so as to produce a sensible effect upon the system, as it will be evident to any one that no *single* remedy, in such a violent case of disease, will be of much service. The use of the Dinsdale Water, both internally, and as a warm bath, will materially forward the cure, but in such cases, it will not be prudent to rely upon its efficacy alone.

In all painful affections of the limbs, as the remains of RHEUMATISM, Palsy, or Gout, this water is of infinite service; in many cases restoring the limbs to their wonted vigour, after every other means has failed in doing so.

In RHEUMATISM, particularly in the chronic form of the disease, the Dinsdale water possesses a high, and well merited reputation. It must not however, be considered an *universal remedy* in this disease; chronic rheumatism appears in such a variety of forms, and is so modified by the constitution of the invalid, that cases will occur in which the water is but of little service, except in improving the general health of the individual.

It not unfrequently happens, when the complaint has continued for a length of time, that a disease of structure occurs in the inflamed parts; the bursæ mucosæ

become distended and tender, the tendons rigid and thickened; and from the disorganised condition of the ligaments, and perhaps from absorption of the smooth surfaces of the cartilages being attended with adhesive inflammation, a partial or complete ankylosis of the joint often takes place. When such is the case, it is clear that *no remedy* will be of any avail, but it is equally evident that such effects may always be prevented by *timely attention*.

The water will be found most useful in those cases, in which there is but little tendency to febrile irritation, and in which the inflammatory diathesis is absent. In such cases, the patient is generally free from pain, when warm in bed, or when sitting at rest. He suffers only upon moving, then the joints feel stiff and painful, and produce a harsh grating, or crackling noise; this grating is, in all probability, occasioned by the compara-

tively dry state of the cartilaginous surfaces, and caused by a defective secretion from the synovial membranes.

When much febrile irritation exists, and there is a degree of inflammation in the affected joints, it will be prudent that this condition be removed, previous to using the bath, though such state does not militate against the internal use of the water. When this febrile state of the system is removed, the use of the bath will materially forward recovery; in fact, it may be considered the principle agent in the cure. (Vide remarks on cold bathing.)

The cold bath, however, ought never to be used, when there is the least tendency to internal disease, and particularly in those cases where rheumatism has at any time affected the diaphragm, or muscles of the chest, or when the constitution is much enfeebled by the action

of the disease; in such cases the warm bath is to be preferred.

The usual attention must be paid to the state of the alimentary canal, and when once the bowels are brought into a proper state, the water must be taken as an alterative.

CASE X.

A poor labouring man had been afflicted with flying rheumatic pains for nine months, principally affecting the feet and knees, his pulse was natural, and the pains were not increased by the warmth of his bed. I gave him some aperient medicine, after the operation of which, I directed him to drink the Spaw Water, and make use of the cold bath twice or thrice a week; by persevering in the use of it for a fortnight, his pains were completely removed. He said that he derived most benefit from the use of the

first bath, the reaction was very great, and in the night he perspired profusely.

CASE XI.

C. A. aged 21, had suffered from rheumatism in the chronic form, for thirteen months, he complained of lameness, stiffness, and irregular pains in the feet, which were much increased in a moist state of the atmosphere; there was a slight redness and tenderness, about the ankle joint of the right foot, the left was not so severely affected; the bowels were costive, the skin dry, the pulse quick and irritable, and he complained of thirst. I first directed my attention to the removal of the febrile symptoms, by the use of purgatives, the application of leeches to the inflamed parts, &c. Having succeeded in this point, as his bowels were naturally sluggish, I gave him some aperient pills to take every other night, in conjunction with the water,

and directed him to use the cold bath. In the course of three weeks, his pains were completely removed, and he remarked to me "that the first use of the bath caused him to perspire freely, and his skin had continued moist ever since."

CASE XII.

T. R. consulted me in 1826, had been afflicted with chronic rheumatism, at intervals, for the last three years, affecting, principally, the feet and muscles of the back; the feet were much swollen, and the pains increased by the warmth of his bed, the bowels costive, the skin dry and harsh, the pulse quick, and he complained of thirst. I directed the use of some aperient pills every night, and desired him to drink freely of the Spaw Water. In the course of a week he was much improved, his bowels had become regular, the skin moist, and the pulse natural, he was able to obtain

some sleep, in consequence of the pains not being troublesome when warm in bed; but there still remained a stiffness in the back, and lameness in the feet, which continued swollen. I now wished him to use the cold bath, but he was afraid to do so, and it required some persuasion on my part, before he would consent. He, however, derived so much benefit from the use of the first bath, that I had no difficulty in persuading him to persevere in its use, and in one month from the time he first employed it, he informed me, to use his own words, "that he had not felt himself so well, or so comfortable, since he was a school boy."

PALSY is always preceded by an attack of Apoplexy more or less severe; although sometimes so trifling as to escape the notice of the individual altogether, until upon making an attempt at motion, he finds he has lost the power of doing so; at other times he falls from his position

insensible, and some time elapses before he is sufficiently collected to ascertain the nature of his disease.

In paralytic cases, the water acts principally by improving the general health of the invalid, by removing that sluggish state of the bowels which so frequently attends the disease, and restoring the stomach to its proper tone.

The well known sympathy which exists between the brain and the stomach, having a great influence over this disease, renders attention to the state of the alimentary canal highly necessary. The patient, therefore, cannot pay too great attention to his bowels; never allowing constipation, if possible, to take place, or a lax state of them to continue; the first case will cause a determination of blood to the head, and the latter, by weakening the digestive organs, retard the cure.

If during a course of the water, the bowels should become constipated, a circumstance, however, of very rare occurrence, the paralytic patient will find benefit from the addition of Epsom Salt to the water. Should the lax state occur, the use of *astringents* will not be proper; a combination of the mercurial with the compound rhubarb pill, is the best remedy; and when once the intestinal function is restored, the water should be taken as an alterative.

The warm bath ought to be used every second or third day; and when the individual is liable to head aches, I have seen very great benefit from bathing the head with cold water, during immersion in the warm bath.

CASE XIII.

About four years ago, I was called to visit a patient who had been deprived

of the use of his lower extremities in a gradual manner; three months previous to my seeing him, he complained of a numbness and occasional want of power, which had gradually increased, and at the time I was consulted, he had entirely lost the use of them. Upon a most careful examination, I could not detect any disease in the spine. I gave him some active purgative, which brought away a very small quantity of dry and hardened fæces; the cause of the disease was now evident, an enema was administered, an incredible quantity of dry, hardened, and offensive matter was brought away, and he immediately recovered the use of his limbs. In this instance, the disease was occasioned by the hardened contents in the lower part of the bowels, pressing upon the large nerves, supplying the lower extremities, and thus paralysing them. Since that time, I have met with another case of a similar description, and I merely mention the fact, as a proof

of the necessity which exists of a proper attention to the state of the alimentary canal, in every instance, but more particularly in cases of Palsy.

In those cases of Gout, which have come under my observation, I have noticed, that, after the invalid has taken the water for a short time, he generally suffers a paroxysm.* Under such circumstances, it will be advisable to abstain from the use of the water, until the *active symptoms* of the disease have subsided, treating the disease, in the mean time, in the usual manner; and when the active symptoms have ceased, the use of the water may be resumed, not only without fear of it causing a return, but also with advantage; for I believe that a fit of the

* This happens very frequently, with most mineral waters; the use of the water is then suspended, and gentle aperients employed until the paroxysm has subsided.

Gout produced, or excited into action, by the Dinsdale Water, will not soon be followed by another.

I do not know any form of disease in which more care is necessary in the exhibition of this water, than in Gout. As a general rule, it ought never to be employed, either externally or internally, when the system is in so irritable a state, that a slight excitement will bring on gouty action; such cases, however, must be excepted, in which the constitutional derangement is so great, that a fit of the gout is a desirable object.

The Dinsdale Water is of the greatest service in that form of the disease, when the parts which have suffered from gouty action, are simply in a stiff and weakened state, when there is a freedom from inflammatory action, and feverish state of the system.

In all these affections of the limbs, the invalid should not fail to add, to the other remedies employed, the important point of diligent friction upon the affected parts.

In the diseases incident to the fair sex, as CHLOROSIS, AMENORRHŒA, MÆNORRHAGIA, FLUOR ALBUS, &c., the Dinsdale Water is of infinite service, and when no disease of the uterine organs exists, it may be used with safety and advantage.

CHLOROSIS occasionally depends upon general debility, but is more frequently caused by a disordered state of the digestive organs; witness the singularly depraved appetite, the flatulency and acidity in the stomach, and bowels, and the obstinate constipation usually attendant upon these symptoms; thus precluding a sufficient supply of nourishment, at a time when it is most wanted.

In such cases a due preparation, previous to using the water, must be attended to; otherwise but little benefit will be derived from its use. The warm bath contributes greatly in removing the languid state of the circulation, and obstruction of the natural evacuations; and when once a favourable change has been effected by its use, the progress towards recovery is astonishingly rapid. When the individual is convalescent, great benefit will be derived from the use of the cold shower bath, with a tonic plan of treatment.

When the disease arises from general weakness of the system, the water should be taken as an alterative; and it will be advisable to use the warm bath, or warm shower bath, two or three times, each time gradually lowering its temperature, as a preparation, previous to using the cold shower bath. A generous diet, with the moderate use of good wine, combined with gentle exercise, particularly on horse-

back, and the use of some mild tonic, will materially forward the recovery of the invalid.

CASE XIV.

June 14th, 1825. M. B., aged 19, complained of palpitation of the heart, pains in the back and loins, costive state of bowels, flatulency, loss of appetite and debility; she had a short dry cough, the pulse small and quick, the lips pale and bloodless, and the eyes encircled with a livid mark, the menses were deficient in quantity, and sometimes altogether retained. I directed the use of an aperient pill every night in conjunction with the water, and the use of the warm bath every other day.

June 22. The palpitation of the heart was considerably relieved, the dry cough was nearly gone, her spirits and appetite improved, the evacuations from the bowels

were more healthy and regular. I directed her to take one ounce of the *Mistura Ferri Composita* thrice a day, and to continue the use of the pills, &c. as before. She continued improving rapidly, and on the 6th of July, the menses appeared. She now laid aside the use of medicine altogether, and made use of the cold shower bath every second or third day for a fortnight, at the expiration of which time she was restored to perfect health.

CASE XV.

A young lady, aged 20, consulted me in August last, had been ill five years, and for the last eight months had been altogether confined to her bed. It appeared that her illness was first produced by sleeping in a damp bed, at a time when she ought to have been particularly careful of herself. In consequence of which she had suffered severely from

violent attacks of spasm in the stomach and bowels, alternating with an affection of the nerves of the face, (*Tic Doloureux.*) When she consulted me I found her dreadfully emaciated, complaining of violent pain in the stomach, which was always increased upon taking food; she had frequent attacks of vomiting, the matter rejected resembling mucus, and the evacuations from the bowels being of the same character, the menses irregular, and sometimes altogether retained, pulse 130, dry skin, she passed sleepless nights, was weak as cradled infancy, and laboured under great depression of spirits. By drinking the water as an alterative, and using the warm bath daily, in the course of three weeks she was able to leave her room, her pulse was reduced to 84, and her nights were more comfortable. At the expiration of five weeks she was able to ride out on horseback daily, for two hours, her appetite improved, she slept well, and in the latter

end of October she returned home quite well, if we except a degree of debility, the natural consequence of such a long illness.

Dr. Fenwick mentioned to me two cases of Amenorrhœa, that came under his observation, whilst a visitor at the Dinsdale Spaw; in which the use of the water was followed by the happiest effects.

MÆNORRHAGIA not unfrequently arises from a plethoric state of the system; when such is the case, the invalid ought (in addition to the usual preparation necessary, previous to using the water) to lose a little blood from the arm, proportioned to the violence of the disease. The water should be taken so as to act rather smartly upon the bowels, and when the violence of the disease has subsided, it may be taken as an alterative; the shower bath being used at the same time, as recommended in page 78.

If, on the contrary, the disease originates in debility of the system, a different plan of treatment must be pursued. In such cases, advantage will be obtained from the use of some mild tonic, in conjunction with the water, which must be taken as an alterative, rather than as an active aperient.

I never yet met with a case of FLUOR ALBUS which was not accompanied with a greater or less impaired state of the digestive organs; and I never yet met with a case, which did not yield to a course of the Dinsdale Water, even when the disease had been of many years standing.

The warm bath is not admissable in every case of Fluor Albus; on the contrary, I have frequently known it aggravate the disease: it ought therefore to be used with caution; or, if used at all, the

warm shower bath, as a preparation for the cold shower bath, is to be preferred.

CASE XVI.

Mrs. T., aged 30, complained of pain in the stomach, loss of appetite, costiveness, debility, and fluor albus. I directed the use of some aperient pills, previous to taking the water, and the use of the cold shower bath. In a fortnight, her health had materially improved, her appetite returned, and the bowels had become regular, but the most *unpleasant symptom* still remained, this also was removed in a very short time, by using the water as a lotion thrice a day. I have seen her twice since, and she has never had any return of her complaint.

CASE XVII.

A lady, aged 35, who had been married two years, in the first year of her mar-

riage, was delivered of a dead child, after a tedious labour; her recovery was slow, and from that time she frequently laboured under an affection of the stomach, accompanied by that distressing complaint, fluor albus. I recommended a plan of treatment similar to that in the last case, and in the course of six weeks, she was restored to perfect health.

It is impossible for me, in this place, to point out all the different plans of treatment which may be called for, in all the various cases of female weakness, I shall therefore content myself with observing, that, in *every case*, a course of the water properly managed, will be found of great service, particularly by females at a certain period of life; in which cases I am convinced, from personal observation, that more benefit will be derived, than from the use of any other single remedy.

In affections of the rectum, but parti-

cularly in cases of PILES and FISTULA IN ANO, this water is a most useful remedy.

The individual afflicted with piles will be sure to derive benefit from the use of the water; this disease is frequently occasioned by the use, or rather abuse, of aloetic purgatives, or by allowing the bowels to remain in a constipated state. It is by no means a dangerous disease, but it is always troublesome, and sometimes excessively painful.

The excellent quality which the Dinsdale Water possesses of keeping the bowels in a proper state, not only during a course of it, but for some time also after it has been discontinued, renders it a powerful remedy in these cases. The advantages of sulphur, as a mild unirritating purgative, and one which seems to continue its operation through the whole of the intestinal canal, has long established its efficacy in

those hæmorrhoidal affections, which require this evacuation. In these cases, the water should never be taken in such excess, as to occasion unpleasant sensations.

In FISTULA IN ANO, this water is of great service; one case which came under my care was completely cured by the use of it alone. It must not, however, be considered a certain remedy in this disease; the case alluded to is the only one which has come under my observation, in which the complaint was removed by the action of the water alone. Other individuals have certainly derived great benefit from the use of it, by the general improvement of their health; but, as I have previously stated, it cannot be considered a certain remedy, when employed alone. At the same time it is well worthy of a trial, for when it does not succeed in removing the disease, it will enable the invalid to recover from the

effects of an operation, much sooner than would otherwise be the case.

CASE XVIII.

C. F., aged 41, a shoemaker by trade, laboured under fistula in ano; upon examination, I found that the sinus did not extend further up the gut than one inch, and recommended an operation for its removal, to which he would not consent. I had but little hope that the Dinsdale Water would produce any beneficial effect; but, as he seemed anxious to try its efficacy, I desired him not to drink more of it than was necessary for the producing one healthy evacuation daily; directed him to wash the part frequently with the water, and to use the warm bath. At the expiration of a fortnight, he called upon me, when the parts looked more healthy, discharging good pus. Finding things going on so favourably, he determined to persevere, and at the expiration of a month,

from his first commencing the use of the Dinsdale Water, he again called upon me, when the sinus was nearly healed; in fact, it had become so trifling as hardly to deserve notice; he is now quite well.

The water may be used with advantage in cases of WORMS, particularly ASCARIDES, which usually inhabit the lower part of the intestinal canal, and are so troublesome, not only to children, but occasionally also to the adult. Used in the form of a clyster, it is a certain remedy.

CASE XIX.

A. F. brought her child to me on account of a disordered state of the bowels; I found the belly hard and tumid, the stools slimy, the breath fetid, the skin dry, with a quick pulse. I suspected that the child was troubled with worms, and directed the use of some aperient medicine, which brought away a number of asca-

rides, commonly called thread worms. I now determined to try the efficacy of the Dinsdale Water as a vermifuge, and that I might not be disappointed, or deceived, I stood by whilst a clyster of the water, made new milk warm, was administered to the child: it proved most efficacious, nearly half a pint of ascarides being voided along with it; the child rapidly recovered.

Independently of the excellent qualities possessed by the Dinsdale Water, in common with other sulphureous waters, it acts powerfully upon the skin, through the numerous pores of which it operates with great activity, the body acquiring the smell of sulphur, and silver and gold worn about the person, becoming tarnished; hence its great utility in many affections of the surface.

Many diseases of the skin depend upon a disordered state of the stomach,

and first passages; others upon want of personal cleanliness; some are produced by contagion, and some are hereditary: 'but all are agravated by irregularities in living, and a disordered state of the digestive organs.

That a disordered state of the digestive organs is frequently the cause of diseases of the skin, no one will doubt. Some kinds of food when taken into the stomach, or improper mixtures of food, will frequently produce an eruption upon the surface of the body.* Dr. Willan is of opinion, that a disorder of the skin, thus produced, is liable to become confirmed and habitual, by any repetition of such diet. Nor does it seem unreasonable that an acrimony in the blood, produced by

* Sir G. Tuthill, in his lectures on the practice of physic, mentions the case of a lady, who could not eat a single strawberry, without being covered with a rash resembling Scarlatina.

improper diet, or bad digestion, should more particularly affect the vessels of the skin, whose sensibility is greatest, and whose minute ramifications expose them to closer contact with any morbid matter passing through.

In this age of luxury and refinement, the bath is rarely used, unless ordered by the physician, for the recovery of health; hence the perspirable matter perpetually exhaling, is suffered to condense on the surface of the body: it accumulates, hardens, forms a crust upon the skin, and stopping the pores, forbids an exit to that fluid, which nature designed to throw off. This, therefore, stagnates, turns acrimonious, stimulates the extreme vessels, raises the cuticle in pustules, &c. and thus perhaps some hereditary disease of the skin is excited into action, which might otherwise have lain dormant; or a disease of a contagious nature, as the Itch, is generated.

The disease once formed is apt to become confirmed ; and to attempt the removal of it by the external application of mercurials, or astringents, is difficult and dangerous ; for it seems to be a law in the animal economy, that the sudden suppression of one action, occasions another sympathetic action in some other part of the system. In other words, a superficial inflammation suddenly repelled, is frequently succeeded by an inflammatory action in some of the viscera, disorder of the stomach, asthma, &c.

In other affections of the cuticle, of a more violent degree, as *Lepra*, this water is particularly useful. This form of disease is more frequently hereditary, than excited into action by other causes. Some poisonous substances, introduced into the stomach, have produced an eruption of *Lepra*. The poison of copper is stated to have speedily excited it in several

persons at the same time.* Dr. Bateman mentions cases in which spices, and alcohol, received into the stomach, was followed by a leprous eruption. Dr. Willan imputed the origin of this disease to cold and moisture, and to certain dry sordes on the skin; but these are no general causes of the disease, as it frequently makes its appearance upon individuals in respectable ranks of life, by whom every attention to cleanliness is scrupulously regarded.

There are two forms of this disease, the *Lepra vulgaris*, and *Lepra alphoides*. LEPRA VULGARIS most commonly commences in the extremities, where the bones lie nearest to the surface, especially below the elbow, and the knee, and usually on both arms, or both legs at the same time. From these parts it gradually extends, by the formation of new and distinct

* See Medical Facts and Observations, Vol. 3, p. 61.

patches, along the arms or thighs, to the breast and shoulders, and to the loins and sides of the abdomen. The hands also become affected, and in many cases the hairy scalp; but the face is seldom the seat of large patches, although some scaliness occasionally appears about the outer angles of the eyes, and on the forehead and temples, extending from the roots of the hair. In more severe cases, the nails of the fingers and toes are much thickened, become opaque, and of a dirty, yellowish hue; are incurvated at their extremities, and their surface irregular, from deep longitudinal furrows, or elevated ridges.

LEPRA ALPHOIDES differs chiefly in the smaller size of the patches, seldom extending beyond the diameter of a few lines,—rarely confluent, or running into each other,—the scales are much whiter, and more minute,—it is limited to the extremities, and is most common in children.

Mineral waters, strongly impregnated with sulphuretted hydrogen, independently of their other qualities, when used as a bath, are powerfully stimulant to the surface; and hence the use of the warm sulphur bath, not only removes the scaly matter, which is continually secreting in leprous cases, but also stimulates the cutaneous vessels to a more healthy action; whilst the internal use of the water materially assists, by its alterative power, in restoring the secretions to a healthy state. I have seen several cases of this loathsome disease, evidently hereditary, yield to the use of this water, after the individuals had in vain sought relief from the usual remedies.

The Dinsdale warm bath is a most powerful remedy in both forms of this disease, and ought, on no account, to be neglected; it should be used every day, or at least every other day, employing diligent friction to the affected parts, dur-

ing the time of immersion, which ought to be continued for twenty minutes or half an hour, if the patient is able to support immersion for that length of time. The water must be taken as an alterative; the diet light and moderate; malt liquors and spirits must be avoided, as every indulgence on those points will not fail to aggravate the disease.

CASE XX.

A gentleman in this neighbourhood asked my advice under the following circumstances:—About six months previous to consulting me, he observed a number of small red spots to break out, upon his knees and elbows, which gradually extended along the thighs and arms, becoming covered in their progress with white scales. Upon examining the parts, I found that at the point where the disease first commenced, they had formed thick crusts, not unlike the scales of a fish, which were

easily removed, and underneath the skin appeared smooth, red, and shining; I also observed one or two patches upon the scalp and forehead. He informed me that the disease had proceeded very gradually, and had not become very troublesome until within the last month, when the quantity of scaly matter every day separated, increasing, and the itching, when warm in bed, or heated, becoming intolerable, he became alarmed. This was evidently a case of Leprosy; I directed the use of some aperient medicine, in conjunction with the Dinsdale Water, and the use of the warm bath every other day, desiring him to remain in it half an hour, or longer, if he could bear it, and to use diligent friction with the flesh brush during the time of immersion. He pursued this plan for a fortnight, when I again examined him; I found him much improved, and he informed me, to use his own words, "that the complaint was now bearable;" at the expiration of another fortnight, every unplea-

sant symptom had nearly vanished, the eruption being confined to the parts where it originally commenced; this also gradually died away, and he has never had any return of the disease.

The Dinsdale Water has been found of great service in the different forms of disease of the skin, called ECZEMA, but particularly in that variety of the complaint which arises from the irritation of mercury.

In the ITCH, in every stage of the disease, it is a certain remedy; and in every instance is to be preferred to the unpleasant process of smearing the body with sulphureous ointment. In very bad cases, the cure will be accelerated by the addition of one ounce of the sulphuretted kali to each bath; but such addition is not necessary to effect that purpose.

The water will be found of service, in

all those eruptions arising from a disordered state of the digestive organs, as blotched face, &c., and many other affections of the skin, usually called scorbutic.

Several individuals have informed me that they had laboured under an affection of the skin, upon the neck, chest, and belly, for years, having the appearance of brown or copper coloured blotches; known to professional men as the *PITYRIASIS VERSICOLOR*, of Willan, which gradually disappeared as the disordered state of the digestive organs was removed by the use of the water.

It is not uncommon for the invalid, suffering from internal disease, not only to get rid of the internal complaint, but, to his surprise, find sores upon the lower extremities, which had been long troublesome and painful, completely cured also. And I am convinced that many ulcers would heal, which are considered incurable, if,

in addition to the external applications employed, some medicine was taken internally, so as to improve the habit of body of the invalid; and I have no doubt but that it is in this manner that the Dinsdale Water produces such unexpected and happy effects.

Upon the whole, the Dinsdale Water is an agent of decided power and efficacy not only in the diseases mentioned in the preceding pages; but in many others also. It is a powerful auxiliary in all cases of fever, quenching the thirst sooner than common water, and materially assisting the operation of purgative medicine. It is also of service in many affections of the urinary organs, but particularly in Diabetes.

Mineral Waters have long been considered powerful remedies, in many cases of disease; but, I believe that the Dinsdale Water possesses very superior claims upon

the attention of the public. Its efficacy is doubtless much increased by drinking the water at the fountain, where the patient's mind, being constantly engaged by the company, agreeable prospects, and the advantages of pure air and exercise, he is sure to receive both hope and entertainment; which in many cases certainly coincide with the general curative effect of the spring itself. Besides which, there is a confidence in natural remedies in the human mind, which gives to mineral waters a medical character, not to be attained by the substitutions of art; thus rendering them objects of general interest; "I am persuaded," writes the celebrated Lady Mary Wortley Montague, "Mineral Waters, which are provided by nature, are the best, perhaps the only real remedies."

The Dinsdale Spaw may, under certain circumstances of disease, be visited at all times; but the best seasons for

deriving advantage from its use, are the summer and autumn; when the benefits of air and exercise may be combined with the use of the water, which at these periods of the year, is in the best possible state to remove those affections for which it is employed.

The diet of the invalid should be moderate in quantity, and plain in quality; for what benefit can possibly be derived from a course of alterative aperient water, if a system of repletion with a variety of stimulating food be every day pursued?

It is a good rule to eat only of one dish at the same meal; and with regard to dessert, the least quantity is the best; as, during a course of this water, fruit is apt to disorder the bowels, and should therefore be avoided. The quantity of fluid taken at meals should be moderate, soups should be abstained from, as also ought pickles, and salads; spinage, as

being a vegetable which readily ferments, and any other vegetable not quite in season.

A moderate use of good wine, as Madeira, or Sherry, may be allowed; but should these disagree with the invalid, and become acid upon the stomach, weak brandy and water may be substituted for ordinary drink.

In that necessary part of regimen, regular daily exercise, the patient should be careful to avoid exposure, and all active exertion during the heat of the day; and preserve the powers of his constitution, by every care and attention, in order to do full justice to a course of the water.

A N A L Y S I S

OF THE

Croft Waters,

&c., &c.

Analysis, &c.,
OF THE
CROFT WATERS.

History and Situation.

CROFT Spaw is situated within the borders of Yorkshire, and on the confines of the bishopric of Durham; four miles distant from the market-town of Darlington, ten from Richmond, twelve from Northallerton, thirteen from Stockton, and four from the Dinsdale Spaw.

It appears, from some old MSS., in the possession of Colonel Chaytor, of Witton

Castle, upon whose property the Spaw is situated, that the old well was first brought into notice by Sir William Chaytor, bart. in the year 1668-9. The spring rising to the day in a rich piece of ground, was called the "Stinking Pits," from the strong sulphureous smell of the water; and being a copious spring, and no care taken of it, the ground around it became boggy, and rendered the collecting of the water a difficult task; but, in the year 1668-9, in consequence of some remarkable cures performed by drinking the water, Sir William caused a bath, &c., to be erected; and from this period devoted much of his time and attention to the Spaw, carefully noting down any particular cure, &c.

In the year 1692, in consequence of the numerous sick who flocked to the spring, he was under the necessity of forming rules to be observed by the visitors; and so early as 1713, the water had acquired such fame, that it was sold in London,

sealed up in bottles, at an exorbitant price, and much company resorted to the Spaw from different parts of the kingdom. But, as more suitable accommodations were made at other places, it became, in some measure forsaken from the want of equal conveniences; and its advantages principally confined to the inhabitants of the surrounding country: until, in the year 1808, when the present proprietor erected a capacious hotel, with suitable conveniences, and a number of comfortable lodging houses for the accommodation of the visitors. The excellent manner in which the Spaw Hotel is conducted, and the attention which is paid to the comforts of the invalid, are well known; and reflect the greatest credit upon Mrs. Robinson.

The New Spring was discovered, in August last, by boring through the rock; the following is the account of the borings, as furnished me by the engineer:—

	Fathoms.
Gravel and Clay.....	2
Red Sand Stone.....	12
Very hard White Sand Stone.....	2
Hard thin beds of flinty Chert, with soft Partings.....	10

In a strata of Plate, the first the workmen met with, at a depth of twenty-six fathoms, the Spring burst forth.

Over this spring it is the intention of Colonel Chaytor to build new baths, upon an extensive scale, which it is calculated will be open to the public in the course of the ensuing season.

There is another mineral spring at Croft, which rises to the day in the middle of a brook, called "Croft Well Beck," and which is generally known by the name of the "Canny Well." In its medicinal properties and contents it resembles the old spring; but, from its exposed situation, being frequently mixed with the

water of the brook, I have always been unable to collect a sufficient quantity of it for the purpose of stating its contents with any degree of accuracy.

The air of Croft is remarkably pure; the late Dr. Clarke, an eminent physician of Newcastle-upon-Tyne, used to say, "the air about Croft, and the vicinity of the vale of the Tees, put him in mind of North Devonshire."

The surrounding country is pleasant, and the different views on the banks of the Tees are delightful; commanding a prospect over an extensive tract of country, in the highest possible state of cultivation, through which the

* * * * "Winding Tees
Rolls o'er his rocky bed, and sees
His copious waters rush amain,
And fertilize the expansive plain.*"

* See "Croft Spaw," a poem; to which the reader is referred for a more particular account of the surrounding country, &c.

Analysis of the Old Spaw, at Croft.

THE water is beautifully transparent, and sparkles when poured into a glass; it has a slight smell of sulphuretted hydrogen gas; and, so far from being nauseous, is agreeable to the palate. The flow is very copious, amounting to about three hundred gallons per hour. Its temperature is uniformly $51^{\circ}\frac{1}{2}$.

Action of Tests.

1. Superacetate of Lead. A precipitate, of a dirty white colour.

2. A piece of silver was placed so as to allow the water from the spring to fall upon it; in the course of two minutes it was tarnished.

3. Lime water, a copious white preci-

pitae, soluble with effervescence in muriatic acid.

4. Muriat of Barytes, a dense white precipitate.

5. Nitrate of Silver, a precipitate of a dirty white colour. With the boiled water, the precipitate is perfectly white.

6. Pure Ammonia, a light cloud.

7. A solution of Carbonate of Ammonia was added in slight excess to the water, which rendered it milky; it was then filtered, and a solution of Phosphate of Soda added to the filtered liquor; a white precipitate, of a granular appearance, was deposited upon the bottom and side of the glass.

8. Hydrosulphuret of Strontian, a copious white precipitate.

9. Oxalic Acid, a moderate white precipitate.

10. Oxalat of Ammonia, a dense white precipitate.

11. Syrup of Violets was turned green.

12. Tincture of Galls, no immediate change; but upon being allowed to stand twenty-four hours, the water became of a dark grass green colour, with a shining pellicle upon its surface.

13. Prussiat of Potash, no immediate change; but at the expiration of twenty-four hours, a light blue colour was evident.

Examination of the Gaseous Contents.

A. A FLASK, which contained exactly seven ounces, was filled with the water, and gradually heated by means of a spirit lamp; and the gas received over warm water into a graduated jar; the boiling temperature being continued until no more gas came over. In this manner, the corrections for pressure and temperature being first duly made, 1.05 cubic inches of gas was obtained.

B. The gas obtained in the last experiment was submitted to the action of a solution of lead in excess of acid, which reduced its volume to .95 of a cubic inch.

C. Lime water, employed in a similar manner, reduced its bulk still further to .2 of a cubic inch.

D. The remaining $\cdot 2$ was found to consist entirely of azote, as it was neither combustible itself, nor capable of supporting combustion.

E. Eight ounces of the water were made to boil, for fifteen minutes, in a glass flask, luted to a receiver, into which a quantity of lime water had previously been introduced. In this manner, a quantity of carbonate of lime was obtained, which, when dried, weighed, $1\cdot 7$ gr., which is equivalent to $\cdot 85$ of a cubic inch of carbonic acid gas, in half a pint of the water, or $13\cdot 6$ cubic inches in one gallon.

F. Now experiment C. gives $\cdot 75$ of a cubic inch of the same gas in seven ounces of the water, or $13\cdot 71$ cubic inches, in one gallon. The gaseous contents may therefore be fairly stated as follow:—

Gaseous Contents in one Gallon.	Cubic Inches.
Carbonic Acid Gas.....	13.65
Sulphuretted Hydrogen.....	1.82
Azote.....	3.65
	<hr/>
	19.12
	<hr/>

Examination of the Solid Contents.

A. SIXTEEN ounces of the water slowly evaporated yielded twenty grains of solid matter, dried at the usual temperature.

B. In order to separate the muriates contained in this product, it was digested in alcohol for forty-eight hours.

C. This alcoholic solution, when evaporated to dryness, gave a small portion of solid matter, weighing 1.2 gr., which deliquesced considerably, upon exposure to the air, and became all dissolved.

D. This deliquesced mass, when dis-

solved in distilled water, was found to consist entirely of muriat of lime.

E. The saline residue insoluble in alcohol was digested in distilled water, and a further solution of its contents obtained, the matter insoluble in this menstruum being set aside for further examination.

F. The watery solution was divided into two equal portions; the one portion was decomposed at a boiling heat, by the addition of subcarbonate of soda, and a precipitate of carbonate of magnesia obtained, weighing, when dried, 1.7 gr., which quantity is equivalent to 4.63 grains of dried sulphate of magnesia.

G. The other portion of the watery solution was treated with nitrate of barytes to free it from its sulphuric acid, and after filtration, nitrate of silver was cautiously added, so long as any precipitate was produced, but it was so trifling in

quantity that it did not affect a very delicate balance.

H. The substance insoluble in water was acted upon by acetic acid, a slight effervescence taking place, and a further solution of its contents obtained; which, upon the addition of a carbonated alkali, gave a precipitate amounting to 5·3 grains of carbonate of lime.

I. The remaining substance, when dried, weighed exactly 3·5 grains, and was found to consist entirely of sulphate of lime.

K. In order to ascertain, as accurately as possible, the quantity of iron contained in a given portion of the water, one gallon of the water was boiled in an open vessel, for half an hour, in order to deprive it of its carbonic acid; it was then filtered, and the carbonates remained upon the filter.

L. The carbonates thus obtained were dissolved in diluted muriatic acid, and pure ammonia was added to this solution, so long as a precipitate of a reddish colour was obtained

M. This precipitate was dried, after which acetic acid was added to it, in order to dissolve any portion of lime, which might have been precipitated along with it.

N.^a The precipitate was again dried, re-dissolved in diluted muriatic acid, and precipitated by an alkaline carbonate, dried at the usual temperature of 212, and, when placed in the balance, weighed 1.1 gr.

The contents of this water, therefore, may be stated as follow, in one gallon:—

Gaseous Contents.	Cubic Inches,
Carbonic Acid.....	13·65
Sulphuretted Hydrogen.....	1·82
Azote.....	3·65
	<hr/>
	19·12
	<hr/>

Of the Solid Contents.	Grains.
Muriat of Lime.....	9·6
Carbonate of Lime.....	42·4
Sulphate of Magnesia.....	74·08
Sulphate of Lime.....	28·
Carbonate of Iron.....	1·1
Loss in the different Experiments.....	4·82
	<hr/>
	160·00
	<hr/>

Medical History,

THE water now under consideration, claims great attention, possessing, independently of its gaseous impregnation, an excellent combination of saline ingredients.

Muriat of Lime, is a substance of great activity in its operation on the human constitution, and when taken to the extent contained in a quart of this water, it is not probable that it will remain inert. For my own part, I believe that the muriat of lime, operates more actively, when received into the stomach in a state of great dilution, than when taken in a more concentrated form; being less liable to produce irritation; and from its diluted state passing more easily through the absorbents; from which, in a more concentrated form, it may be excluded, and its action confined to the first passages. When received into the system, it is a powerful tonic, stimulant, and deobstruent, and thus we may in some measure account for the efficacy of this water, in scrofulous cases, general debility, &c. I may here remark, that many mineral waters, famous for the cure of scrofulous affections, have been proved by chemical analysis to owe their medicinal properties

entirely to holding a small portion of this salt in solution.

The next substance which presents itself to our notice, is the Sulphate of Magnesia. It is to this salt that the water is indebted for its aperient and diuretic properties. Sulphate of Magnesia is one of the most valuable purgatives we possess, and it is not perhaps generally known, that a much smaller quantity of this salt, than is usually taken, will, when dissolved in a large portion of water, act as efficaciously and much more pleasantly, than the dose usually swallowed; it is therefore more than probable, that when thus presented to us by the chemistry of nature, in combination with the other saline ingredients contained in the water, it will be rendered more active in its operation on the human frame.

The Carbonate of Lime is held in solution by the carbonic acid gas, and

possesses the properties of an antacid, and it is remarked by Dr. Willan, that, "when the stomach is primarily affected from a relaxed irritable state, with sourness, flatulence, acidity, and the other symptoms of indigestion, the internal use of the water along with bathing, is of the greatest advantage. The calcarous earth contained, absorbs the acid, while the fixed air extricated, proves a grateful stimulus."

With regard to the iron contained in this water, the quantity is so small, only amounting to one grain and one tenth, in a gallon, that a common observer would never suppose it capable of exerting any beneficial influence on the system; and it becomes an enquiry, of some interest, to determine whether it possesses any claim as a remedy. Medical and chemical writers universally admit, that the most active form, in which iron can be administered medicinally, is in its state of solution by carbonic acid; and the celebrated Dr. Cullen,

in his Lectures on the Materia Medica, observes, “that in all cases of laxity, and debility, and in obstructions, and slowness proceeding from these causes, iron is employed, though other simple astringents might also answer the effect. Here we ought to beware of too sudden an astriction, which might be attended with bad consequences; and, therefore, in exhibiting it in these cases, we should give it in small doses, and trust to length of time for a cure, and by this means we shall avoid those inconveniences, of which physicians often complain, in their preparations of iron. Mineral waters often produce cures, which we in vain attempt to perform by the combinations in our shops, even although these waters contain nothing but iron. *This is manifestly owing to the weakness of the dose*, in proof of which we find, that the strongly impregnated waters seldom answer so well as those weak ones we commonly reject.” By experiment, I found that this water does not

part with any considerable portion of its carbonic acid, at a lower temperature than 135° , which may be stated as at least thirty-five degrees higher than the temperature of the human stomach; it is, therefore, more than probable, that, in this state of chemical activity, the whole of the iron contained in the water will be carried into the circulation; and we may reasonably expect some beneficial effect from its operation. Dr. Trotter, in his *View of the Nervous Temperament*, says, “there can be no doubt that the efficacy of mineral waters is very considerable, in many cases of indigestion, nervous debility, and those variations of it, usually called bilious. The ferruginous, or those impregnated with iron, are the most valuable; and where *this principle happens to be joined in the same water, with some salt of a purgative quality*, in certain nervous and dyspeptic habits, they are peculiarly useful. Where occasional icterial symptoms prevail, from obstruction of the biliary ducts,

whether from spasm, mucus, or other causes, which retard the peristaltic motion of the intestines, by the bile being deficient, such combination of iron and purgative salt, have the best effects; as, the *laxative* power of the one, does not interrupt the *invigorating* quality of the other. Iron, dissolved in water, by the chemistry of nature, seems to act more powerfully by its *extreme diffusion*; and as, in this state of solution, it is capable of circulating through the minutest vessels, its stimulant and strenthening powers are exerted on the remotest parts of the system. Much of the operation of chalybeates may be, by chemical union with the fluids of the body; but there can be little doubt, that they also directly stimulate and excite the nervous substance. In those persons, whose cold extremities and pale complexion, indicate a languid circulation and poor blood, besides weak digestion, chalybeate waters often perform wonders."

The carbonic acid gas possesses no small power over the human frame; it is to this æriform fluid that many mineral waters, in a great measure, owe their activity; in consequence of its holding some of their most powerful saline contents in solution, and thus enabling them to penetrate the inmost parts of the system. When common water is charged with this fluid, it acquires briskness, is pungent to the palate, sparkles when poured from one vessel into another, and, when received into the stomach, has a most exhilarating effect, sometimes approaching to a degree of intoxication. It is, therefore, a grateful stimulus, to which a considerable and very useful influence may be assigned.

The action of the sulphuretted hydrogen gas, when received into the system, I have noticed, when treating of the Dinsdale Water.

The azotic gas ought not to be passed over in silence. It is yet undiscovered whether this gas is a simple or a compound substance; we cannot unite it with water by agitation, and we are at a loss to know in what manner nature forms this union. United with a certain portion of oxygen, it forms the air we breathe; but, alone, it is incapable of supporting animal life. We are unacquainted with its effects, when received into the human stomach, but it is supposed to act as a stimulus to that organ.

From the preceding survey, it appears, that this water possesses the powers of a tonic and alterative, united with its effects as an aperient and diuretic; and it is worthy of observation, that, although every simple medicine which has hitherto proved beneficial to mankind, has met with much opposition from the interested views of some, and the ignorance of others; yet, for upwards of a century and

a half, during which time this water has proved generally useful, it has met with the sanction and approval of our most eminent physicians. Dr. Short, in his *Analysis of Mineral Waters*, places it immediately after Harrowgate, and gives it a high character. The late Dr. Willan, a physician, eminent for his scientific attainments, published a treatise upon this water, and gives a most favourable opinion of its efficacy; and many physicians, now living, recommend its use, not only from the benefit they have seen others receive; but from personal experience of its good effects.

What has been stated, with regard to a preparation, previous to commencing a course of the Dinsdale Water, is equally applicable to the Waters of Croft; and, in every instance, will be of service in assisting their operation.

With regard to the internal use of this

water, as a remedy, its agrees well, and sits lightly and easy upon delicate stomachs; and has been found particularly useful in dyspepsia, proceeding from a debilitated state of the digestive organs, scrofula, affections of the urinary organs, rickets, female diseases, rheumatism, cutaneous affections, &c.

Perhaps there is no disease, which appears in such a variety of forms, or which is so difficult of cure, as SCROFULA. The late Dr. Cullen supposed scrofula to depend upon a peculiar formation of the lymphatic system. Mr. R. Carmichael, in his Essay on Scrofula, considers this disease as arising from, and generated by, a disordered state of the digestive organs. The late Dr. Heberden attributed much influence in its production to the habitual use of impure water; others consider scrofula as a disease closely connected with a delicate constitution, lax fibres, and debility. My own opinion is, that scrofula, in a

great measure, depends upon a predisposition to become affected by certain diseases, which is communicated by the parent to his offspring; this is, in some instances, more strongly marked than in others; but, although this predisposition to disease exists, yet it is inert, and insufficient of itself to produce disease, but requires the application of some exciting cause; as, any uncommon or temporary exposure to wet and cold, confinement in cold, damp habitations; the living upon food of an unwholesome and indigestible nature, the want of warm clothing, breathing impure air, the neglect of salutary exercise, indolence, &c.

The first appearance of this disease is generally in that of small oval tumours under the skin, upon the sides of the neck, below the ear, or under the chin; which, in process of time, enlarge and suppurate; the tumour then gradually subsides, whilst the ulcers, thus formed, spread un-

equally in every direction. Occasionally, the joints of the elbows, ancles, fingers, or toes, are the parts, which are first affected; when this is the case, the joints swell and become enlarged; the slightest motion produces deep-seated and excruciating pain; matter is formed, which is discharged at numerous small openings, and sometimes it is of so acrimonious a nature as to erode the ligaments and cartilages, and produce a caries of the neighbouring bones. The eyes are sometimes the seat of this disease, and are affected with inflammation, causing ulceration of the eyelids, and not unfrequently terminating in loss of sight.

This disease appears also in a great many other forms, and when it mingles with any accidental or local complaint, it uniformly aggravates every symptom, rendering that disease more difficult of cure.

Numerous are the cases upon record in

which the Croft Water has been found of service in the different forms of scrofula above enumerated, and many remarkable cases have fallen under my own observation. When applied externally to scrofulous sores, it moderates the discharge, produces a secretion of healthy matter and promotes the granulating process; whilst the internal use of the water gives tone to the digestive organs, and thus restores strength to the system. The inflammation of the eyes will frequently yield to the application of this water after every other means have failed; this fact is noticed by Dr. Willan in the following words, "There is an inflammation of the eyes, a common attendant on scrofulous complaints, and which sometimes occurs in infants without any other appearance. The cure is not unfrequently tedious, nor, if attempted by the external application of astringents, &c., without danger. I know, however, from many

cases, that a proper use of this mineral water, is a safe and effectual remedy."

"The cases recorded of this kind are the most numerous, and the cures performed almost miraculous. When the eyelids were much enlarged and sore, with a perpetual flow of tears, and vision much impaired, a complete cure has been made in less than a month, and every disagreeable symptom removed."

The affections of the urinary organs, in which this water has been found of most service, are, **DIABETES**, and **GRAVEL**.

DIABETES is characterised by a frequent discharge of urine, the quantity of which far exceeds that of the aliment or fluids introduced into the system; continued thirst, voracious appetite, dry skin, swelling of the legs, emaciation of the body, and hectic fever. Various theories have been advanced as to the cause of

this disease, but it appears to depend upon an impaired action, or morbid change in the natural powers of digestion.

In those cases of diabetes which have come under my care, I have recommended the patient to take thirty grains of the calcined magnesia, in a tumbler of the Croft Water, thrice a day; and, in every instance, such a plan of treatment, combined with the use of the warm bath, wearing flannel next to the skin, a diet consisting *solely* of animal food, carefully abstaining from sugar and vegetables, has proved successful.

In addition to my own experience of the efficacy of the Croft Water, in this disease, I have great pleasure in being permitted to lay before the reader, the following extract from a letter, from Dr. Cayley, of Durham, to Col. Chaytor:—

“ During the severe weather, last spring,

'I was much troubled with a diabetic affection, to a great extent, which disappeared with the frost, without any remedies; in the month of July, however, it returned, and went on increasing till the middle of September; accompanied occasionally in the night season by a paralytic affection of the neck of the bladder; a dry mouth and tongue, dry skin, constant lethargy, a false and craving appetite, and other unpleasant symptoms, which, all combined, gave me great uneasiness; and, hearing that our friend Mr. Raine, had been completely cured of a similar, but much severer affection, by drinking the Croft Water, I resolved to have recourse to it; and, after one week's drinking and bathing, I am happy to say, that I feel myself completely restored.'

GRAVEL is produced by a disposition in the secretion from the kidneys to form calculous matter, and is supposed to de-

pend upon the presence of an acid principle in the secreted fluid, known by the name of uric acid. This acid is one of the component parts of the urine when the body is in perfect health, and is not produced by any diseased action in the animal economy. In health, it is held in solution by the urine; in gravel, a portion of it is deposited in the cavities of the kidneys, destined to collect and evacuate the urine, in the form of sand or sabulous matter; and when once deposited, it continues to increase by the deposition of repeated layers of uric acid, until, in the process of time, calculi are formed.

The symptoms of this disease, are a dark appearance of the urine, as if it were mixed with coffee grounds, and a dull heavy pain in the loins, caused by the irritation of foreign matter in the kidneys. A fit of the gravel, as it is termed, is caused by the passage of sand,

or calculi, from the kidney along the ureters to the bladder, producing violent pain in the loins, and a numbness of the thigh on the side affected; nausea and vomiting, and frequently a suppression of urine.

Every attempt to dissolve calculi in the kidneys, or bladder, has hitherto failed; hence, the only method of cure must consist in introducing such substances into the circulating fluid as will check the deposition of the uric acid, and thus prevent the formation; or, when formed, the enlargement of calculi. Dr. Willan observes, "the water, I find from experiment, has a much more considerable effect as a diuretic than common water; must therefore be well adapted, by increasing the flow of urine, to wash out sabulous concretions from the pelvis, (of the kidney) ureters and bladder, and perhaps alters the state of the secreted liquor, making it less liable to form such depositions."

Whether the Croft Water possesses any power, as a solvent over calculi it is impossible for me to state; but it is certain, that during a course of this water, the mucus, and purulent discharge, which frequently accompanies the urine, is rendered less painful; and, in many instances, calculi are voided, to the great relief of the patient.

This water has been found of service in RICKETS; this disease generally appears between the ninth month and second year of infancy; after the latter period, it rarely shows itself. It is caused by a deficiency of the phosphate of lime or animal gluten in the bones, in consequence of which they are deprived of strength and solidity, producing distortion of the cylindrical bones, incurvation of the spine, &c., &c. Dr. Willan observes, “weakly and delicate children, by bathing in Croft Water, have, in a short time, been restored to health and vigour. The Rickets, which depend

upon, or are nearly connected with this habit in children, and generally prove very obstinate, yield more readily to this treatment than any course of medicines. Indeed, it is difficult, at a tender age, to make them take internally, what might be proper for any length of time."

Mr John Veirac, surgeon, at Rotterdam, in a Treatise on the Rickets, which obtained a premium from the Society of Arts and Sciences, at Utrecht; and Mons. Bonhomme, of Paris, in a Memoir on the nature and cure of the same disease; assert, that this disorder arises from the developement of an acid, in the stomachs of infants, approaching in its properties to the vegetable acids; but, in particular the oxalic acid, which is incorporated with the mass of blood, and insinuates itself into the very bones.* Assuming

* Mr. J. Veirac asserts, that the blood in these cases, after death, effervesces with the Liquor Ammonia Subc.

this theory to be correct, may not the carbonate of lime contained in the Croft Water, by neutralizing the acid in the stomach, whilst, by its alterative and tonic powers, it imparts strength to the system, cure the disease?

The bed of the rickety patient should consist of a hair mattress, and, that the weight of the body may exert as little influence as possible on the bones, he should be placed upon his back. The cold bath should be used frequently, and its effects increased by friction with flannels; the diet should be generous and nutritive, and the child, when taken into the open air, should be carried in an horizontal posture.

In CHLOROSIS, MÆNORRHAGIA, FLUOR ALBUS, and the other diseases incident to the fair sex, the Croft Water is equally as efficacious as the Dinsdale Water, and what has been said of these diseases,

when treating on the Dinsdale Water, is also applicable to the waters of Croft.

This Water has been long famed in the cure of Chronic Rheumatism. “In stiffened and enlarged joints, from that cause, weakness, and loss of motion, it has performed several cures, of which the crutches formerly hung up were testimonials.”

The Croft Water has also been found of great service in diseases of the skin, particularly in the different forms of Herpes, and Lepra, the Itch, and many other affections of the cuticle, usually called Scorbutic.

“In old age, the inferior extremities are exposed to various affections, inflammatory swelling and tension, defluxion of humours of the erysipelatous kind, and other eruptions depending on the scorbutic habit, joined to weakness of circulation,

whose termination is frequently in ulcers, very obstinate and difficult to cure. In all those cases, the water of Croft has been employed with essential service, and particularly in the last instance. Defluxions on the legs not yielding to the common course of medicine, have, by bathing and drinking it regularly, been entirely removed in the space of a few weeks."

I could have given many cases in illustration of the efficacy of this Mineral Water; but, as I found that by so doing I would swell this treatise to an unconscionable size, I have refrained. The cases which I have given in the course of this work, I have carefully selected; not in consequence of any particular circumstances attending them and rendering them remarkable, but rather in consequence of my knowing, from the particular character of the individuals, that my instructions were obeyed to the letter.

Analysis of the New Spaw, at Croft.

THIS water, when drawn from the spring, is transparent, sparkles in the glass, and gives out a strong smell of sulphuretted hydrogen gas; upon standing exposed to the air, for a short time, it gradually loses its transparency, becomes milky, and a minute powder is deposited. This powder is the sulphur, separated from the sulphuretted hydrogen gas, by the oxygen of the atmosphere uniting with the hydrogen. The temperature of the water is 52° .

Action of Tests.

1. Nitrate of Lead; an immediate, copious, black precipitate; with the boiled water, a white precipitate is produced.*

* It requires long boiling to deprive this water of its sulphuretted hydrogen gas. I have detected its presence after the water had been boiled 20 minutes.

2. Lime Water rendered the water milky.

3. Barytes Water, a copious white precipitate.

4. Oxalic Acid rendered the water milky.

5. Oxalat of Ammonia, a dense white precipitate.

6. Muriat of Barytes; an immediate, copious, white precipitate.

7. Nitrate of Silver, a black precipitate; with the boiled water, a white precipitate is produced.

8. Pure Ammonia rendered the water milky.

9. Prussiat of Potash, no change.

10. Tincture of Galls, no change.

11. Muriat of Lime, rendered the water rather brown; and, after standing some time, a dark coloured precipitate was produced; with the boiled water, the precipitate is white, and soluble in dilute nitric acid with effervescence.

12. Carbonate of Ammonia and Phosphate of Soda, a moderate white precipitate.

Examination of the Gaseous Contents.

A. EIGHT ounces of the water were made to boil in a glass flask, connected with a Woulf's apparatus, into which a solution of lead, in excess of acid, had previously been introduced. In this manner, a quantity of sulphuret of lead was obtained, which, when washed and dried,

weighed 2.65 grains. This quantity may be stated as the representative of 1.39 cubic inches of sulphuretted hydrogen gas.

B. To an equal quantity of water, as was employed in the last experiment, an acidulated solution of acetate of lead was added, and the gaseous contents made to pass into a Woulf's apparatus; substituting, for the acetate of lead in the bottles, a quantity of lime water. In this manner, 1.9 of carbonate of lime were obtained, representing .95 of a cubic inch of carbonic acid gas.

C. A glass flask, containing exactly eight ounces, was, with its ground-bent tube, completely filled with the water at the spring. This water was gradually heated by means of a spirit lamp, and the gas received over water, into a graduated jar, the boiling temperature being continued until no more gas came over. The jar, with its contents, was allowed to re-

main inverted, for a length of time, and occasionally agitated, to facilitate the absorption of such portion of the gas as might be soluble in water. There remained $\cdot 3$ of a cubic inch of gas; the necessary estimates and corrections being made for barometrical pressure, assumed at the standard 30° ; and for thermometrical temperature at 60° ; which the water did not appear capable of absorbing.

D. Upon plunging a lighted taper into this residuary gas, it burnt for a moment with a blue flame and became extinguished, its volume being reduced $\cdot 07$.

E. Lime water, thrown up into the tube, became sensibly turbid, and the volume of the gas was further diminished $\cdot 03$. The remaining $\cdot 2$ were neither combustible, nor capable of supporting combustion.

The two last experiments indicate the

presence of carburetted hydrogen gas, and azote in this water; and which, perhaps, may be stated most accurately as existing in about equal quantities.

Examination of the Solid Contents.

A. Eight ounces of the water slowly evaporated, yielded ten grains of solid matter, smelling strongly of sulphur.

B. In order to separate the muriates, it was digested in alcohol for twenty-four hours.

C. The alcoholic solution was evaporated, and yielded a small quantity of solid matter, weighing one grain, which deliquesced considerably; and which, upon further examination, was found to consist entirely of muriat of lime.

D. The saline matter insoluble in alcohol was digested in distilled water, and a further solution of its contents obtained.

E. The watery solution was divided into two equal portions; the one portion was decomposed at the boiling temperature by a solution of subcarbonate of soda; and a precipitate of carbonate of magnesia obtained, equivalent to 2·1 of dried sulphate of magnesia.

F. The other portion of the watery solution was treated with nitrate of barytes, to free it from its sulphuric acid; after which nitrate of silver was cautiously added, so long as any precipitate was produced; in this manner, a precipitate of muriate of silver was obtained, equivalent to ·1 of a grain of muriate of lime.

G. The substance, insoluble in alcohol and in water, was acted upon by acetic acid, and a further solution effected; dur-

ing which, a slight effervescence was observable.

H. The acetic solution was treated with subcarbonate of soda, and a precipitate of carbonate of lime obtained, weighing, when dried, four grains.

I. The remaining salt, insoluble in acetic acid, when dried, weighed .5 of a grain, and consisted entirely of sulphate of lime.

From this analysis, the gaseous and solid contents of this water will stand as follow, in one gallon:—

Gaseous Contents.	Cubic Inches.
Sulphuretted Hydrogen.....	22.24
Carbonic Acid.....	15.20
Azote and Carburetted Hydrogen.....	4.8
	<hr/>
	42.24
	<hr/>

Solid Contents.	Grains.
Muriat of Lime.....	19·2
Sulphate of Magnesia.....	67·2
Carbonat of Lime.....	64·
Sulphate of Lime.....	8.
Loss.....	1·6
	<hr/>
	160·0
	<hr/>

Medical History.

Upon comparing the analysis of this Water, with that of other Mineral Waters of a similar character, we are led to conclude, from a knowledge of their effects upon the human constitution; that this water possesses the properties of an aperient and alterative. We find that independently of its very strong gaseous impregnation, it contains a considerable portion of active saline ingredients.

As twelve months have scarcely elapsed since the discovery of this spring, we can only speak of its medicinal powers, in a very limited manner. It is rather unpleasant to the palate having a nauseous taste, followed by a sense of sweetness. When taken to the extent of one pint, it acts upon the bowels; but, in consequence of its strong gaseous impregnation, great care and caution must be observed in drinking it; and also in being properly prepared by purgative medicine, previous to commencing a course of it.

Any omission on this point, may, if the water is taken in any quantity, be prejudicial to the state of the invalid; by producing head ache, distension of the stomach, &c. And in all cases where there is an evident determination of blood to the head, it must be used with caution; and a previous preparation on no account neglected.

We have seen, when treating on the Dinsdale Water, to which this water is similar in its gaseous impregnation; that it possesses a power, peculiar to waters impregnated with sulphuretted hydrogen, not only of correcting any disordered state of the digestive organs, but that it is powerfully alterative; gradually restoring the diseased secretions to a healthy state.

For further information, with regard to the medicinal powers of this water, the reader is referred to the Medical History of the Dinsdale Water; as I have there entered more fully into the method of treatment necessary in the different disorders in which waters of this class have been found of service; and, I have every reason to believe that this water only requires to be known, in order that it may acquire a reputation equal, if not superior, to many others of a similar character.

There are two points, however, which I have omitted when treating of the Dinsdale Water, viz. the probable efficacy of sulphureous waters in cases of poisoning from lead and arsenic.

Painters, plumbers, and other mechanics, whose business causes them to be frequently handling lead, or preparations of lead; are subject to a disease called the painters' colic; produced by the absorption of minute particles of this poisonous mineral; which not unfrequently terminates in paralysis of the wrists and upper extremities.

Observing the power which sulphuretted waters possess when brought in contact with preparations of lead, in causing them to re-approach to the metallic state; it is but reasonable to infer, that, the use of this water both externally and internally in disease arising from this cause, will be of service. It has not

been my lot to see any case of poisoning from lead, where it had been introduced into the system, through the pores of the skin, as is usually the case in painters' colic: but I have seen cases of poisoning from lead, which had been received into the stomach in solution, in wine and cyder. Wines are frequently sweetened with a solution of lead, and cyder, from its being prepared in vessels lined with lead, frequently holds a portion of this mineral in solution. In both cases water impregnated with sulphuretted hydrogen gas, (the preparation used was a solution of sulphuret of potash) gave immediate relief after other means had failed. We may therefore reasonably infer, that mineral waters strongly impregnated with sulphuretted hydrogen gas, as the Waters of Dinsdale and Croft, and which also possesses a laxative power, will be found of service in this dangerous malady.

“ When arsenic has been received into

the stomach, in a solid form, we are unfortunately in possession of no remedy which will decompose the arsenic without producing a poisonous material. If it has been administered in the fluid form: after the stomach has been evacuated, water impregnated with sulphuretted hydrogen gas offers the fairest prospect of success."

I have never seen a case of poisoning from arsenic; but as the preceding passage, which I have taken from my notes of Sir Geo. Tuthill's Lectures on the Practice of Physic, is much to the purpose; I have given it, as the information here conveyed may be of service to others. May not waters of this class be found of service by individuals recovering from the effects of this active poison?

Thus much for the medical powers of these waters, when employed internally; I shall now proceed to the consideration of them as an external remedy.

ON

BATHING IN GENERAL.

THE BATH is a remedy of great antiquity, and deserves more attention than usually falls to its share.

The frequent use of the bath is attended with many advantages; the surface of the body is freed from that scaly matter which always collects, even in the healthiest individuals; the pores of the skin are opened, and the natural perspiration is promoted; the limbs are rendered supple, and a variety of cutaneous disorders, the consequence of want of cleanliness are

avoided. The excellent quality which it possesses of removing all obstructions from the cutaneous pores, and thus giving activity to the vessels of the surface, is not the sole effect of bathing; it has a certain influence on the animal heat, and operates powerfully on the nervous system.

Independently of the beneficial effects arising from the Waters of Dinsdale and Croft, as a common bath, I believe that a large portion of medicated water is absorbed and carried into the circulation, and perhaps from the peculiar manner in which it is received into the system, rendered more efficacious in the removal of disease.

The power of absorbing which the skin possesses is certainly not so active as the surface of the internal cavities of the body, yet it is very great. The increase of weight in the body, after remaining some time in the warm bath; the evident

swelling of the inguinal glands, after long continued immersion of the feet in water,—the effects of cathartic medicines applied externally,*—the effects of mercury by friction,—and the effects of medicated baths,—incontestably prove, that absorption is effected by the skin, under different circumstances, with more or less activity.

Cruikshanks, in his anatomy of the absorbent vessels, says, “that the surface of the skin absorbs other fluids which come in contact with it, I have not the least doubt. A patient of mine who had a stricture in the œsophagus, received nothing either liquid or solid into the stomach for two months; he was exceedingly

* “Cathartic and vermifuge medicines applied externally,” says Darwin, “to the abdomen, seem to be taken up by the cutaneous branches of lymphatics and pouring on the intestine, by the retrograde motion of the lacteals, without having passed the circulation.”—*Zoonomia*, Vol. i. p. 499

thirsty, I ordered him the warm bath for an hour evening and morning, his thirst vanished in the same manner as when he used to drink by the mouth."

I have frequently known the Dinsdale Water, when used as a warm bath, produce a purgative effect upon individuals, who had previously been in the habit of using the common warm bath, without such effect being the consequence. The following remarkable case occurred in my practice, last summer.

CASE XXII.

Mrs. H., aged 46, had suffered severely for three years from a tumour in the right side, supposed by her medical attendants to be an enlargement of the liver; her bowels were remarkably costive, requiring the daily use of cathartic medicine, the evacuations watery; she was much reduced, the skin charged with

bile, quick pulse, and hectic fever. After drinking the water two days, she used the warm bath, immediately after which she was attacked by a violent purging; to her surprise, the tumour in the right side, began to move across the abdomen, and in the course of three hours, a large round mass of hardened matter was expelled with much pain. Upon cutting this mass, a cherry stone was found in the centre, round which it appeared this matter had gradually collected. Mrs. H. rapidly recovered.

The Waters of Dinsdale and Croft are also powerfully stimulant when applied to the surface, and consequently excite more action than the simple cold bath; causing a greater determination to the skin, a fact well known to those who are in the habit of using them.

The Cold Bath.

WHEN a healthy person is immersed in the cold bath, he first experiences a general sensation of cold, accompanied with convulsive sobbings, usually called the *shock*; which is occasioned by the intensity of the cold rendering torpid the vessels on the surface of the body, and determining the blood to the interior; this is followed by a general warmth or glow upon the surface, which is referred to the *reaction* of the system, thus enabling the body to resist an injurious external impression. If the use of the cold bath be not succeeded by this glow, upon which its efficacy depends; but, on the contrary, be followed by shiverings, head-ache, sickness, &c., it ought, on no account, to be persisted in.

It is a popular opinion, that it is highly dangerous to go into the cold bath, when

heated by exercise; it is, however, a practice founded in error; and has occasionally produced, not only alarming, but fatal consequences. In such cases, the effect is usually imputed to going into the water when too warm, whereas it arises from going into it when too cold. “For, though it is perfectly safe to go into the cold bath in the earliest state of exercise, nothing is more dangerous than this practice after exercise has produced profuse sweating, and terminated in langour and fatigue, because, in such circumstances, the animal heat is not only sinking rapidly, but the system parts more readily with the portion that remains.”* The most proper state for taking the cold bath, is, when, by some gentle exercise, the heat of the body is brought to its highest point, *without causing perspiration*; the bather should then

* See Dr. Currie’s Medical Reports on the Effects of Water, cold and warm, as a Remedy in Fever. &c.

undress quickly, and boldly plunge into the water; the shock will by this means be diminished, and the occurrence of the salutary glow will be sure to succeed.

It is better to continue completely immersed in the water, for a short time, than to make repeated plunges; a single complete immersion of the whole body is sufficient. The pulse is variously affected during immersion in the cold bath; in some individuals, it is accelerated; in others rendered slower; but in all cases where the immersion has been *improperly prolonged*, it is diminished both in frequency and strength. Moderate exercise ought to be continued for a time after coming out of the bath, so as to encourage gentle perspiration.

The vigorous and robust may use the cold bath early in the morning; but individuals, whose constitutions are delicate, should not use it until after breakfast,

when the system will have acquired some degree of strength to support the shock, and sustain the reaction so necessary to health.

“Cold bathing is indicated, says Dr. Saunders, “in all those disorders characterized by a languor and weakness of circulation, accompanied with profuse sweating and fatigue on very moderate exertion; tremors of the limbs, and many of those symptoms, usually called nervous, when the moving powers are weak, and the mind listless and indolent; but, at the same time, when no permanent morbid obstruction or visceral disease is present”

I have seen the cold bath produce the most beneficial effects, in that form of Rheumatism, usually called chronic. I am well aware, that professional men are not altogether unanimous, with regard to its use in this disease; some physicians recommending, whilst others again have dis-

approved of it. I never employed the cold bath as a remedy in this form of disease, until three years ago, when a medical friend, who had long suffered severely from chronic rheumatism in his feet and hands, which were so painful, occasionally, as to render the slightest movement agony, determined to try its efficacy; and, after using it every third day, for six weeks, he declared to me, that he had never felt himself better in the whole course of his life. I have seen him twice since that time; and he informed me, that he had never had any return of his complaint, until May, 1826, two years from the time of his first using the bath; when, perceiving some symptoms of a relapse, he again made use of the water, for a short time, which had the effect of removing the unpleasant symptoms.

The fortunate termination of the above case determined me to make a trial of its powers, as a remedy in this disease. I

have, accordingly, recommended the use of it; and I have never known any unpleasant effects arise from it; on the contrary, the result has been highly satisfactory. I have almost invariably remarked, that, after using the first, and sometimes the second bath, the invalid has had a slight accession of fever in the evening of the day he made use of it; which terminated, in the course of twelve hours, in the usual manner, with this exception, that the sweating stage continued longer than usual, and was remarkably profuse.

When the invalid has been afraid of the plunging bath, I have advised the use of the cold shower bath, with precisely similar effects; upon the whole, I consider it an invaluable remedy, when properly employed. It ought never to be used when there are any febrile symptoms present, or when the patient's pains are increased by the warmth of his bed. In short, it is only applicable in that form of

chronic rheumatism *unattended by inflammation*; and when visceral disease is present, it becomes altogether inadmissible, and ought, therefore, never to be used by the invalid without first consulting his medical attendant.

The cold bath is injurious in early infancy; the powers of life not being sufficiently formed to sustain the shock; and I have, in more than one instance, where it had been improperly employed, seen it produce Hydrocephalus and Croup.

Shower Bath.

THE cold shower bath possesses all the good qualities of cold immersion, with a less tendency to produce chilliness and cramps. It is perhaps the safest mode of cold bathing.

“ In nervous diseases, very much of the good effects of the bath arises from the shock, which the nervous system receives from the suddenness of the immersion; this effect is to a great degree insured by the use of the shower bath, which is always a good substitute, where circumstances prevent the use of the common cold bath; and is, in some cases, even to be preferred, as affording a more regulated application, and one that acts immediately upon the head.”*

It is of great service in that species of head ache, commonly called nervous; in hysterical affections, loss of muscular motion, and in many cases of habitual costiveness, arising from debility, unconnected with organic disease. I have seen it of infinite service, when applied to the head, in insanity, while the patient's body was immersed in the warm bath. In this

* See Sir Arthur Clarke, on Bathing.

mode, it is of use in some cases of obstinate head aches, and in apoplexy, after previous depletion by bleeding and purging.

The Tepid Bath.

It has been absurdly supposed, that all baths, which do not in the first instance produce a sensation of cold, must be relaxing. The impunity with which many people remain in the tepid bath for a length of time, is decisive on this point;* in fact, so far from relaxing, or debilitating the system, as is the vulgar opinion, it invigorates, and has a tendency to

* "At Bath, many of the guides remain for several hours, every morning, immersed nearly to the neck in the warm bath, without being relaxed or weakened by it; but, on the contrary, they are in general, a robust, vigorous, and long-lived race of persons."—*Falkner on Bath Waters.*

alleviate all local irritations; inducing a state of repose peculiarly inviting to sleep, diminishing the animal heat, and the frequency of the pulse; rendering it fuller and softer, and producing the most soothing and refreshing effects.

The soothing sensation which it gives and the serenity of mind which it inspires, indicate its good effects; where these are not felt, but on the contrary, an increase of dejection and weakness; they are proofs of its doing harm, and it must be given up.

There exists between the skin and the digestive organs a *sympathy*, or, as it is termed in medical language, a “consent of parts;” in other words, if the skin is affected, the stomach and bowels sympathise and take on a similar action; and this is a consideration of great importance in the cure of bilious, and dyspeptic complaints; and hence, as Dr. Trotter observes, “The warm bath is of infinite service in

that dry, harsh state of the skin which frequently accompanies a disordered state of the digestive organs, where the stomach and bowels become torpid from sympathy with the surface; in such cases, permanent relief is rarely obtained, unless a free perspiration follow the use of it; so liable are affections of the stomach, and the suppression of the cuticular discharge, to alternate with each other.”* In such cases, also, it will frequently produce sleep, after every other means have failed.

It is a useful remedy in the hectic state of the system, whether arising from general or local irritation; and in all those diseases in which the animal powers are weak and cannot support the reaction of cold immersion.

I have seen it of great service in the first stages of Pulmonary Consumption;

* Vide his Treatise on Nervous Temperament, &c.

in one or two cases, I believe it contributed as much to the recovery of the patient as any other means employed; but it is only in the early stages of this disease, that essential service is to be derived from this remedy; at a later period it must be used with caution, and when anasarcaous swellings are present, it ought never to be used.

To delicate individuals, particularly females, hovering on the brink of incurable disease, the tepid bath often proves a powerful agent in the removal of the threatening symptoms. The feelings of the individual will afford the best criterion for the degree of heat to be employed, provided that of 96° be not exceeded; above that point the bath is hot, rather than tepid, and instead of invigorating, has a contrary tendency. Ten minutes is quite sufficient for the first immersion, after which the time may be gradually increased; but the patient should never

remain so long in the bath as to excite unpleasant sensations.

In Chlorosis, the warm bath is of great service in removing the languid state of the circulation, and consequently the obstruction of the natural evacuations, which constitute the leading symptoms of the complaint; in this disease it ought never to be used at a lower temperature than 80°.

When the Dinsdale bath is employed for the removal of affections of the skin, the individual should use it before going to bed: and when much freedom of perspiration is required, some warm diluting drink should be taken: when only a slight action of the skin is desired, the patient may bathe earlier, and go to bed at his usual hour. In affections of the surface, the temperature of the bath may be as high as 97°, and should be kept at that point during the whole of

the immersion, the temperature being determined by a thermometer and not by the sensations of the individual.

The time of immersion in these cases, may be continued longer than when it is employed as a remedy for the removal of internal disease; as a general rule, the invalid may remain in the bath from twenty minutes to half an hour.

It is of great service in all eruptions arising from a disordered state of the digestive organs, as blotched face, Pityriasis versicolor, &c. Also in Eczema, Lepra, and in the Itch, in every stage of the disease. In most cases of disease of the surface, diligent friction ought to be employed, with the flesh brush, during the time of immersion, but particularly in cases of Lepra.

The use of the warm bath affords great comfort and relief to the delicate and

suffering part of the creation during pregnancy; and is highly beneficial in the early periods of infancy, diminishing the danger of teething, and of various convulsive and cutaneous diseases.

The warm bath is a great solace in declining life. "The story of Æson becoming young, from the medicated baths of Medea, seems to have been intended to teach the efficacy of warm bathing, in retarding the approach of old age. The words *relaxation* and *bracing*, which are generally thought expressive of the effects of warm or cold bathing, are mechanical terms properly applied to drums or strings; but are only metaphors, when applied to the effects of cold or warm bathing on animal bodies. The immediate cause of old age seems to reside in the irritability of the finer parts or vessels of our system; hence, these cease to act, and collapse, or become horny or bony; the warm bath is peculiarly adapted to prevent these cir-

cumstances by its increasing our irritability, and by moistening and softening the skin and the extremities of the finer vessels which terminate in it. To those who are past the meridian of life, and have dry skins, and begin to be emaciated, the warm bath for half an hour, twice a week, I believe to be eminently serviceable in retarding the advances of old age.*”

The fear of taking cold, after warm bathing, is founded in error; great care should be taken to rub the skin perfectly dry, after which, the usual clothing may be worn, and gentle exercise taken in the open air; unless the weather should be particularly cold, or the individual feel chilly.

As many individuals wish to continue the use of the bath, upon leaving Croft

* Darwin's Zoonomia, page 686.

and Dinsdale; I have been in the habit of recommending the following formula for the preparation of a sulphur bath. It is the medicated bath used by Bonaparte:—

Take, for every gallon of the water you wish to impregnate,

Two grains of alumine,
 Two grains of carbonate of lime,
 Two grains of hard Spanish soap,
 Four grains of muriat of soda,
 Twenty grains of dried carbonate of soda,
 and
 Sixteen grains of the sulphuret of pot-ash.

Grind the materials together, and boil them in as much water as will dissolve them; stir them over the fire, till the sulphuretted hydrogen gas is disengaged, which is known by an odour resembling the smell of rotten eggs; then mix the ingredients with the water of the bath, previously prepared.

FINIS.

